

# Test Specifications Distributor-type Fuel-injection Pumps

**TestoISO 4113**

VE 4/9 F 2400 R 95

0 460 494 105

 supersedes 3.83  
 company Renault  
 engine F 8 M

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

- mm

see VDT-W-460/

## 1. Settings

	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,1-4,5 mm		
1.2 Supply pump pressure	1400	4,9-5,5 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1000	30,7-31,7 cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	425	6,0-10,0 cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1.5 Start	100	min. 42,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2650	10,5-16,5 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	1400	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 2,3-3,1 (2,0-3,4)	1400 (3,6-5,0)	2000 6,3-7,1 (6,0-7,4)	2400 7,0-7,7 (6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,5-3,1			2400 7,7-8,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)			2400 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	2750 2650 2500 2400 2100 1400 1000 600	max. 6,0 (9,5-17,5) 21,0-29,0 (21,0-29,0) 27,5-30,1 (26,5-31,1) 28,9-31,3 (27,8-32,4) 31,7-33,7 (30,4-35,0) (28,9-33,5) 25,2-28,2 (23,7-29,7)	
switch-off	2400	0	
Idle stop	650 600 425	0 0,2-5,2 (4,0-12,0)	
End stop	330 500	min. 30,0 max. 29,0	
2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10,0 V xxx rated voltage 12V.	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	2,8
KK	18,7-20,7
KL	9,5-12,8

## Observations

Please note instruc-  
tions on sheet 2.

Testing the hydr. cold-start accelerator:

Apply 12 V to expansion element of hydr. cold-start accelerator.  
At 300 1/min there must be a timing-device travel of 1.3- 3.3 mm.



# Test Specifications

## Distributor-type

## Fuel-injection Pumps

WPP 001/4 VWV 2,4 a

3. Edition

En

VE 6/10 F 2400 L 116

0 460 406 018

supersedes 10.83

company: VWV

engine 087 - T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

- mm

see VDT-W-460/..

**Testoil-ISO 4113**

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,4-1,8 mm	0,75	
1.2 Supply pump pressure	1500	5,7-6,3 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery without charge-air pressure	600	26,5-27,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	44,0-45,0 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1.4 Idle speed regulation	415	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 42,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2675	10,0-16,0 cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery				

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1200 0,2-1,0(0-1,3)	1500 (0,9-2,3)	2400 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,3-3,9		2400 8,1-8,7
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2400 (0,75 bar) 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2850	max. 4,0	0,75
	2675	(9,0-17,0)	0,75
	2400	35,5-37,5 (34,2-38,8)	0,75
	1500	(42,2-46,8)	0,75
	800 *	33,5-34,5 (31,0-37,0)	0,30
	600	(24,0-30,0)	0
switch-off elektr.	400	0	
Idle stop	415	(4,0-12,0)	
	600	max. 3,0	
End stop	400	min. 20,0	
	500	max. 30,0	
2.4 Solenoid	max. cut-in voltage xxx min. 10 V xxxxxxxxxx rated voltage 12V.		

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	2,4
AK	21,8-23,8
KL	9,4-12,7

## Observations

Manifold-pressure  
compensator stroke  
= 4,2 mm  
Correction at the  
adjusting nut. (46)

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 2,4 d

3. Edition

En

VE 6/10 F 2400 L 116-1

0 460 406 019

supersedes 10.83

company VWV

engine 087 - T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-

mm

see VDT-W-460/

**Testoil-ISO 4113**

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,4-1,8 mm	0,75	
1.2 Supply pump pressure	1500	5,7-6,3 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery without charge-air pressure	600	26,5-27,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	44,0-45,0 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1.4 Idle speed regulation	415	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 42,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2675	10,0-16,0 cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery				

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1200 0,2-1,0(0-1,3)	1500 (0,9-2,3)	2400 4,1-4,9(3,8-5,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,3-3,9		2400 8,1-8,7
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2400 (0,75 bar) 55-138(40-153)

## 2.3 Fuel deliveries

## 3. Dimensions

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2850	max. 4,0	0,75	K	3,2-3,4
	2675	(9,0-17,0)	0,75	KF	6,3-6,6
	2400	35,5-37,5 (34,2-38,8)	0,75	MS	1,7-1,9
	1500	(42,2-46,8)	0,75	SVS	2,4
	800 *	33,5-34,5 (31,0-37,0)	0,30		
	600	(24,0-30,0)	0		
switch-off mech. elektr.	2400	0		AXK	21,8-23,8
	400	0		eXL	9,4-12,7
Idle stop	415 600	(4,0-12,0) max. 3,0		Observations  Manifold-pressure compensator stroke = 4,2 mm Correction at the adjusting nut. (46)	
End stop	400 500	min. 20 max. 30			
2.4 Solenoid	max. cut-in voltage xxx min. 10 V test voltage XXXXX rated voltage 12V.				

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

VE 5/10 F 2250 L 133

0 460 405 031

 superseded 7.83  
 company VWV  
 engine 153 T

Testoil-ISO 4113

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm  $\pm$  0,02 (0,04)

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5 mm	0,75 bar	
1.2 Supply pump pressure	1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )	0,75 bar	
1.3 Full-load delivery without charge-air pressure	500	21,5-22,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	43,5-44,5 cm <sup>3</sup> /1000 strokes	0,75 bar	2,5 (3,0)
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 50,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75 bar	
1.7 Load-dependent start of delivery				

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA: 0,75 bar	n = rev/min mm	850 1,1-1,9 (0,8-2,2)	1500 (2,6-4,0)	2250 5,4-6,2 (5,1-6,5)
2.2 Supply pump LDA: 0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,2-3,8		2250 7,3-7,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138 (40-153)		2250 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2700 2525 2250 1500 * 850 500	max. 3,0 ( 8,0-16,0) 37,0-39,0 (35,8-40,2) (41,8-46,2) 32,5-33,5 (30,8-35,2) (19,0-25,0)	0,75 bar 0,75 bar 0,75 bar 0,75 bar 0,3 bar 0
switch-off elect.	400	0	
Idle stop	375 400 **1125	( 4,0-12,0) max. 3,0 20,5-22,5	
End stop	400 500	min. 18,0 max. 25,0	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	4,2
A	
B	

## Observations

Please note instruc-  
tions on sheet 2.
 2.4 Solenoid max. cut-in voltage xxx min. 10 V  
 rated voltage 12V.

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Adjust TAS only at full LDA pressure of 0.75 bar.

\*\* Adjust EGR with gauge.

\* Manifold-pressure compensator stroke = 3,6

Correction at the adjusting nut. (46)

# Test Specifications Distributor-type Fuel-injection Pumps

**Testoil-ISO 4113**

VE 4/9 F 2250 R 134-4

0 460 494 137

supersedes-

company: VWV

engine: 086 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,2-3,7 mm	0,75	
1.2 Supply pump pressure	1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery without charge-air pressure	600	22,5-23,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	42,5-43,5 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1.4 Idle speed regulation	475	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 35 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,8-4,2)	2250 6,0-6,8 (5,7-7,1)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,3-3,9		2250 7,4-8,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 (0 bar) 55-138 (40-153)		2250 (0,75 bar) 55-138 (40-153)

## 2.3 Fuel deliveries

## 3. Dimensions

for assembly  
and adjustment  
mm

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	and adjustment mm
End stop	2750 2525 2250 1500 * 1000 600	max. 3,0 ( 8,0-16,0) 38,0-40,0 (36,7-41,3) (40,7-45,3) 32,5-33,5 (30,7-35,3) (20,0-26,0)	0,75 0,75 0,75 0,75 0,30 0	K KF MS SVS	3,2-3,4 5,7-6,0 1,2-1,4 3,2
switch-off elektr.	400	0		A B	
Idle stop  **	475 1200 1125	( 4,0-12,0) max. 4,0 22,0-24,0		Observations  Please note instruc- tions on sheet 2.	
End stop	400 500	min. 21 max. 29			
2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.				

\* Manifold-pressure compensator stroke = 4,0

\*\* Setting point for EGR

Pull control lever toward full load until gauge fits over driver and housing cover web. Measure delivery.

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 2,4 l

1. Edition

En

VE 6/10 F 2400 L 144

0 460 406 029

 supersedes -  
 company VWV  
 engine 087 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,2-1,6 mm	0,75 bar	
1.2 Supply pump pressure	1500	5,7-6,3 bar (kgf/cm <sup>2</sup> )	0,75 "	
1.3 Full-load delivery without charge-air pressure	600	25,5-26,5 cm <sup>3</sup> /1000 strokes	0 "	
Full-load delivery with charge-air pressure	1500	44,0-45,0 cm <sup>3</sup> /1000 strokes	0,75 "	2,5 (3,0)
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes	0 "	2,0 (3,0)
1.5 Start	100	min. 42 cm <sup>3</sup> /1000 strokes	0 "	
1.6 Full-load speed regulation	2600	10,0-16,0 cm <sup>3</sup> /1000 strokes	0,75 "	
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1500	1500	2000	2000	2400
LDA = 0,75 bar	mm	(0,7-2,1)	(*)	3,6-4,4	(3,3-4,7)	(*) 5,6-6,4
2.2 Supply pump	n = rev/min	600	*1500	2400		
LDA = 0,75 bar	bar (kgf/cm <sup>2</sup> )	3,3-3,9	6,8-7,4	8,1-8,7		
Overflow delivery	n = rev/min	600 (0 bar)	2400 (0,75 bar)			
	cm <sup>3</sup> /10 s	55-138(40-153)	55-138(40-153)			

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2750	max. 4,0	0,75
	2600	(9,0-17,0)	0,75
	2400	35,0-37,0 (33,7-38,3)	0,75
	1500	(42,2-46,8)	0,75
	**800	32,5-33,5 (30,7-35,3)	0,3
	600	(23,7-28,3)	0

 switch-off  
elect.

400

0

Idle stop

375

(4,0-12,0)

450

max. 3,0

End stop

400

min. 20

500

max. 30

2.4 Solenoid

max. cut-in voltage xxx min. 10 V

rated voltage 12V.

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max. 6,0

\*\*LDA-Hub

5,3

A  
B

Observations

Please note instruc-  
tions on sheet 2.

\* Test hydr. cold-start accelerator:  
At the designated points do not apply voltage to  
magnet of hydr. cold-start accelerator.

1500 1/min 3,0 - 4,0 (2,8 - 4,2)

2000 1/min 4,9 - 6,1 (4,8 - 6,2)



⑥

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 2,4 l 1

1. Edition

En

**Testoil-ISO 4113**

VE 6/10 F 2400 L 144-1

O 460 406 030

 supersedes -  
 company VWV  
 engine 087 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

-

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,2-1,6 mm	0,75 bar	
1.2 Supply pump pressure	1500	5,7-6,3 bar (kgf/cm <sup>2</sup> )	0,75 "	
1.3 Full-load delivery without charge-air pressure	600	25,5-26,5 cm <sup>3</sup> /1000 strokes	0 "	
Full-load delivery with charge-air pressure	1500	44,0-45,0 cm <sup>3</sup> /1000 strokes	0,75 "	2,5 (3,0)
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes	0 "	2,0 (3,0)
1.5 Start	100	min. 42 cm <sup>3</sup> /1000 strokes	0 "	
1.6 Full-load speed regulation	2600	10,0-16,0 cm <sup>3</sup> /1000 strokes	0,75 "	
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1500	1500	2000	2000	2400
LDA = 0,75 bar	mm	(0,7-2,1)	(*)	3,6-4,4 (3,3-4,7)	(*)	5,6-6,4 (5,3-6,7)
2.2 Supply pump	n = rev/min	600	*1500	2400		
LDA = 0,75 bar	bar (kgf/cm <sup>2</sup> )	3,3-3,9	6,8-7,4	8,1-8,7		
Overflow delivery	n = rev/min	600 (0 bar)	2400 (0,75 bar)			
	cm <sup>3</sup> /10 s	55-138 (40-153)	55-138 (40-153)			

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	2750	max. 4,0	0,75
	2600	(9,0-17,0)	0,75
	2400	35,0-37,0 (33,7-38,3)	0,75
	1500	(42,2-46,8)	0,75
	**800	32,5-33,5 (30,7-35,3)	0,3
	600	(23,7-28,3)	0
switch-off mech.	2400	0	
elektr.	400	0	
Idle stop	375	(4,0-12,0)	
	450	max. 3,0	
End stop	400	min. 20	
	500	max. 30	
2.4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	rated voltage	12 V	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,3-6,6
MS	1,7-1,9
SVS	max. 6,0
**LDA-Hub	5,3
A	
B	

## Observations

Please note instruc-  
tions on sheet 2.
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10.83

A11

A11

\* Test hydr. cold-start accelerator:  
At the designated points do not apply voltage to  
magnet of hydr. cold-start accelerator.

1500 1/min 3,0 - 4,0 (2,8 - 4,2)

2000 1/min 4,9 - 6,1 (4,8 - 6,2)

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

WPP 001/4 VWV 2,4 1 3

1. Edition

En

VE 6/10 F 2400 L 146

0 460 406 033

 supersedes -  
 company VWV  
 engine 087

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-4601

Testoil 150 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply pump pressure	1500	5,2-5,8 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5 cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1.5 Start	100	min. 35 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2700	6,0-12,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	750 0,2-1,0(0-1,3)	750 (*)	1500 (2,3-3,7)	1500 (*)	2400 5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,8-3,4	*1500 6,3-6,9	2400 7,7-8,3		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)	2400 55-138(40-153)			

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2825 2700 2400 1500 750	max. 3,0 (5,0-13,0) 22,0-24,0(20,7-25,3) (26,7-31,3) 26,0-29,0(24,5-30,5)	
switch-off elect.	400	0	
Idle stop	375 600	(4,0-12,0) max. 4,0	
End stop	400 500	min. 20 max. 25	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
SVS	3,6
A	
B	

## Observations

Please note instructions  
on sheet 2.

2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.
--------------	---

\* Test hydr. cold-start accelerator:  
At the designated points do not apply voltage to  
magnet of hydr. cold-start accelerator.  
750 1/min 1,2 - 2,4 (1,1 - 2,5)  
1500 1/min 3,7 - 4,7 (3,5 - 4,9)

⑥

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

46

WPP 001/4 VWV 2,4 1 2

1. Edition

En

VE 6/10 F 2400 L 146-1

0 460 406 034

supersedes -

company: VWV

engine: 087

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting - mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply pump pressure	1500	5,2-5,8 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery without charge-air pressure	1500	28,5-29,5 cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	375	6,0-10,0 cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1.5 Start	100	min. 35 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	2700	6,0-12,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	750 0,2-1,0(0-1,3)	750 (*)	1500 (2,3-3,7)	1500 (*)	2400 5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,8-3,4	*1500 6,3-6,9		2400 7,7-8,3	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)			2400 55-138(40-153)	

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2825 2700 2400 1500 750	max. 3,0 (5,0-13,0) 22,0-24,0(20,7-25,3) (26,7-31,3) 26,0-29,0(24,5-30,5)	
switch-off mech. elektr.	2400 400	0 0	
Idle stop	375 600	(4,0-12,0) max. 4,0	
End stop	400 500	min. 20 max. 25	
2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.		

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
SVS	3,6
A	
B	

## Observations

Please note instruc-  
tions on sheet 2.

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10.83

A15

A15

\* Test hydr. cold-start accelerator:  
At the designated points do not apply voltage to  
magnet of hydr. cold-start accelerator.  
750 1/min 1,2 - 2,4 (1,1 - 2,5)  
1500 1/min 3,7 - 4,7 (3,5 - 4,9)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 RAB 9,7 & 1

1. Edition

En

PES 6 A 95 D 410 RS 2108 RSV 450-1000 A 1 B 2004 DL

Komb.-Nr. 0 400 876 266

supersedes -  
company Raba  
engine -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,1+0,1	10,8 - 11,0	0,3(0,6)			
450	5,9-6,1	1,1 - 1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 34	450	5,5	1000	11,1-11,2
	x = 4,5						100	min. 19,0	800	12,5-12,7
							450	5,9-6,1	500	12,6-12,8
ca. 59	10,1	1040-1050					535-595	= 2,0		
2a	4,0	1085-1115					650	max. 1,0		
	1200	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ) rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1000	107,5-109,5 (105,5-111,5)	1040-1050*	800	124,5-129,0 (122,5-131,0)	-	-	450	5,9-6,1	
			500	125,5-129,5 (123,5-131,5)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

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A17

A17

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 TOP 19,0 a  
2. Edition

En

PE 12 A 85 D 610 RS 2141

RSV 200-1100 A1B 253 DL

supersedes 6.83

company Torpedo

engine T 519

Komb.-Nr. 0 400 670 005

1-12- 4- 9 - 2 - 11- 6 - 7 - 3 - 10- 5 - 8

0-45-60-105-120-165-180-225-240-285-300-345° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,15-2,25}{(2,10-2,30)}$  mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4±0,1	8,7-8,8	0,3(0,45)			
500	12,8±0,1	8,2-8,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 24	200	5,5	1000	12,4-12,5
	X = 6,0						100	min. 19,0	500	12,8-12,9
							200	5,9-6,2	800	12,7-12,9
ca. 55	11,4	1040-1050					420-480	= 2,0		
2a	4,0	1155-1185								
	1250	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Fuel-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to )							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	86,5-87,5 (84,5-89,5)	1040-1050*		500	82,0-84,0 (80,0-86,0)	-	-	-	-
				700	87,5-90,5 (85,0-93,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB, 5,7 q 2

11. Edition

En

PES 6 A 90 D 410 RS 2293 RSV 350-1300 A 0 B 783 L

supersedes 3.83  
company Daimler-Benz  
engine OM 352 A  
110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-1,25) mm (from BDC)  
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1300	11,4-0,1	7,7-7,7	0,3(0,45)			
350	7,3-7,5	1,0-1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 3,5	-	-	-	loose	350	7,4	1300	11,4-11,5
							100	min.19,0	800	11,7-11,8
							350	7,3-7,5	1050	11,5-11,7
ca. 62	10,0	1340-1350					570-	630=2,0		
2a	4,0	1460-1490								
	1600	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to ) rev/min				Idle			
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 75,5-76,5 (73,5-78,5)	1340-1350*	LDA 500	0,7 bar 62,0-64,0 (59,5-66,5)		100	78,0-88,0 (75,0-91,0) = 15,1 - 15,5mm RV	-	-
LDA 800	0,7 bar 67,0-69,0 (64,5-71,5)		LDA 500	0 bar 50,0-52,0 (47,5-54,5)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

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# D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 q 2

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	Gauge pressure =	mm	(1)
PES 6 A .. RS 2293 +RSV..AOB 783 L	0,7	0 0,39 0,28		11,7-11,8 10,7-10,8 11,4-11,5 10,9-11,1

Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,40 - 0,50 bar

Unlocking at 0,15 - 0,25 bar

# Test Specifications Testoil-ISO 4113

## Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 q

3. Edition

En

PES 6 A 90 D 410 RS 2293	EP/RSV 350-1400 AO B1080DL(1)
RS2293	350-1425 A2 B1028DL(2)
RS2293	350-1400 AO B 745L (3)
RS2293Z	350-1400 AO B 745L (4)

supersedes 4.78  
 company Daimler-Benz  
 engine OM352 (A)  
 92kW (125PS - 1-2)  
 115kW (156PS - 3)  
 123kW (168PS - 4)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25  
 (2,10-2,30) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	9	4,5 - 5,0	0,3(0,45)			
	6	1,8 - 2,6				
	12	7,3 - 8,2				
200	9	2,0 - 2,8				

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_

### B. Governor Settings

..1080DL (1)

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 67	1400	16,0	without auxiliary spring			ca. 20	350	9,2	1380	0
	1450	11,4					100	19 - 21		
	1500	5,5					350	8,9-9,5	600	0,2-0,3
	1470	8,0-10,4					500	3,6-6,2		
⑤	1520	3,8-6,8	with auxiliary spring				700	0 - 1		
	1640	0,3-1,0								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7 mm RW	8	9	
(1) 1400	63,0 - 64,0 (61,0 - 66,0)	1450-1460*	600	51,0 - 53,0 (49,0 - 55,0)	100	14,7-15,3			
					1520-1540 = 4,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## B. Governor Settings

B. Governor Settings

TABLE 2

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 60	1425	16,0	without auxiliary spring			ca. 20	350	7,5	1400	0
	1500	11,5					200	19 - 21	800	0
	1560	6,5					350	7,2-7,8	450	0,4-0,6
	1500	10,0-12,2	with auxiliary spring				600	1,0-4,5		
	1600	3,8-6,0					780	0 - 1		
⑤	1760	0,3-1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1400	60,0 - 61,0 (58,0 - 63,0)	1450-1460*	500	46,0 - 48,0 (44,0 - 50,0)	100	14,7-15,3		
			⑥a					

\* 1 mm less control rod travel than col 2

Checking values in brackets

## B. Governor Settings

745L (3 - 4)

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 63	1400	16,0	without auxoliary spring			ca. 29	350	7,9		
	1500	9,8					200	19 - 21		
	1580	3,8					350	7,6-8,2		
ca. 61	1400	ca. 11,9	with auxiliary spring				500	3,1-5,5		
	1525	ca. 4,6					700	0 - 1		
	1650	0,3-1,0								
⑤										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(3) 1380	74,5 - 75,5 (72,5 - 77,5)	1420-1430*			100	78,0-88,0 (75,0-91,0)	350	7,9
(4) 1380	75,5 - 76,5 (73,5 - 78,5)	1420-1430*						

\* 1 mm less control rod travel than col 2

Checking values in brackets

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 8

2. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1200 A0B 1101-1 L

Komb.-Nr. 0 400 876 316

superseade 7.83  
company Daimler-Benz  
engine OM 352  
70 kW (95 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2, \dots 2,25$  mm (from BDC)  $9,0-12,0$  mm  
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning torque control valve mm 6
1200	8,4-8,5	4,5-4,6	0,3(0,45)			
350	7,1-7,3	0,8-1,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7	-	-	-	-	350	7,2	1200	8,4-8,5
	x = 4,0						350	7,1-7,3	600	9,8-9,9
							475-535	= 2,0	800	9,5-9,7
ca. 65	7,4	1225-1235							1000	8,9-9,2
2a	4,0	1290-1320								
	1400	-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1200	45,0-46,0 (43,0-48,0)	1225-1235*	600	45,0-47,0 (43,0-49,0)	100	78,0-88,0 (75,0-91,0) = 14,9 - 15,3 mm RW	-	-	

Checking values in brackets

\* : mm less control rod travel than col 2

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12.83

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 3

7. Edition

En

PES 6A 90D 410RS 2293 RSV 350-1300A0B1105DL

Komb.-Nr. 0 400 876 260

supersedes 6.83  
company Daimler-Benz  
engine OM 352  
92 kW(125PS)(1)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30)  
2,15-2,25 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev./min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1300	9,5-9,6	6,2-6,3	0,3(0,45)			
350	7,4-7,6	1,2-1,6	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev./min Degree of deflection of control lever 1			Intermediate rated speed 4			Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel rev./min mm 10 11	
Control rod travel mm 2	Control rod travel mm/rev./min 3		4	5	6	rev./min 8	Control rod travel mm 9		rev./min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 28	350	5,9	1300	9,5- 9,6
	x	= 6,0					100	min. 19,0	800	10,2-10,4
							350	7,4-7,6		
ca. 68	8,5	1340-1350					470-530	= 2,0	500	10,3-10,4
	4,0	1430-1460					700	max. 1,0		
2a	1550	0,3- 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp. 40°C (104°F) rev./min 1		6 Rotational speed limit Note: changed to rev./min 3		3a Fuel delivery characteristics rev./min 4		Starting fuel delivery Idle rev./min 6		5 4a Idle stop Control rod travel mm 8 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
1300	62,5 - 63,5 (60,5 - 65,5)	1340-1350*	800	60,0-62,0 (58,0-64,0)		100	80,0-90,0 13,7-14,3 mm RW	-	-
			500	54,0-56,0 (52,0-58,0)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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12.83

A24

A24

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 q 6

3. Edition

En

PES 6 A 90 D 410 RS 2293-1

RSV 350-1400 AOB 745-1L

Komb.-Nr. 0 400 876 312

supersedes 8.82

company Daimler-Benz

engine OM 352 A

115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,15-2,25}{(2,10-2,30)}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	11,9+0,1	7,6 - 7,7	0,3(0,45)			
350	7,8-8,0	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 29	350	7,4	-	-
	X	4,25					100	min. 19,0		
							350	7,8-8,0		
ca. 61	10,9	1420-1430					550-610	2,0		
⑤	4,0	1530-1560								
	1700	0,3- 1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1380	75,5-76,5 (73,5-78,5)	1420-1430*	600	63,0-66,0 (61,0-68,0)	100	88,0-98,0 (85,0-101,0) = 16,3-16,7 mm $\frac{R}{10}$	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

B1

**BOSCH**

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CA

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 g 2

4. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 41C RS 2294 RQV 300-1425 AB 740 L  
Komb.-Nr. 0 400 844 047

supersedes 0.83  
company Daimler-Benz  
engine OM 314  
62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,15-2,25 \\ (2,1-2,3) \end{matrix}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3 - 6,4	0,3(0,45)			
300	7,5-7,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 14	100	min. 9,1	250	0,7-1,0
ca. 61	8,7 4,0 1700	1455-1465 1550-1580 0 - 1,0				370-520 3a	300	7,5-7,7	640 1030 1425	3,2-3,6 5,5-5,7 8,1

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5a		Starting fuel delivery idle switching point 6	Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	rev/min 8	Control rod travel mm 9
1400	62,5 - 63,5 (60,5 - 65,5)	1455-1465 *	-	-	100	13,7-14,3 mm RW	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

B2

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82



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4  
3. Edition

KHD 1 d

En

PE 6 A 95 D 410 LS 2450	RQ...929,930,984D,986D,987D	supersedes	2.78
PE 8 A 95 D 410 LS 2451	RQV...898,931,973,974,975,976,983D,	K H D	
PE 10A 95D610/4 LS 2452	988D,990D,996,999,1006D,1009,	company	F 6 L 413 F/ FW
PE 12A 95D 610 LS 2453	1014,1016,1020,1021,1026D	engine	8
Instructions P. 2	EP/RSV...1002D, 1084		10
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.			12

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Speed pre-tensioning change control valve mm
1	2	3	4	2	3	6
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm/rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
	See page 3-8									
2a										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Retardation speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 °C (104 °F)		Note: changed to rev/min		rev/min	cm <sup>3</sup> /100 strokes	rev/min	cm <sup>3</sup> /100 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
See page 9 - 22									

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
11.83

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## INSTRUCTIONS

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### 2. Cam sequence and angular cam spacing

6 cyl. 1 - 6 - 5 - 4 - 3 - 2 - 1  
0 - 75 - 120 - 195 - 240 - 315 - 360°

8 cyl. 1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 - 1  
0 - 45 - 90 - 135 - 180 - 225 - 270 - 315 - 360°

10 cyl. 1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2 - 1  
0-27-72-99-144-171-216-243-288-315-360°

12 cyl. 1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12 - 1  
0-15-60-75-120-135-180-195-240-255-300-315-360°

### 3. Instructions for testing

#### to Section B:

Torque control dimension a = .. -section C, column 8 as required for trials no. for pre-adjustment. Final dimension to be set according to fuel-delivery characteristics in Section C, column 4-5. Further instructions for trials no. will follow on a separate information sheet.

#### to Section C:

If supplied, the control-rod stop with RQV governors must be set with a torque control of  $n = 600/\text{min.}$

**B. Governor Settings**

RQ..

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Setting point				Control rod travel	
rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11	12

300 1325 AB 929L, 930L

650	15,6-16,0	650	16,0	1350	15,6-16,0	580	0	200	6,4-8,1	-	-
				1400	5,0-12,2			300	4,4-6,5		
				1440	0 - 7,0			400	1,2-3,5		
				1500	0 - 1,5			480	0		

Torque control travel on flyweight assembly dimension a = - mm Speed regulation At 1 mm less control rod travel

300/1250 AB 929L

650	15,6-16,0	650	16,0	1270	15,6-16,0	580	0	200	6,3-8,1	-	-
				1300	10,0-14,8			300	4,2-6,2		
				1350	0 - 8,0			400	0,8-3,2		
				1420	0 - 1,5			480	0		

Torque control travel on flyweight assembly dimension a = - mm Speed regulation At 1 mm less control rod travel

300/1250 AB984DL, 987DL

650	15,6-16,4	650	16,0	1290	13,0-15,4	570	0	200	6,5-8,1	750	15,8-16,0
				1320	6,0-13,7			350	2,8-5,0	900	15,3-15,6
				1340	0 - 10			410	0,6-3,2		
				1420	0			470	0		

Torque control travel on flyweight assembly dimension a = 0,2 mm Speed regulation At 1 mm less control rod travel

300/1250 AB986DL

650	15,6-16,4	650	16,0	1300	11,0-15,0	660	0	200	6,1-8,2	800	15,6-15,9
				1320	6,4-12,5			300	4,0-6,0	950	15,0-15,4
				1340	0 - 9,6			410	0 - 2,4		
				1420	0			560	0		

Torque control travel on flyweight assembly dimension a = 0,3 mm Speed regulation At 1 mm less control rod travel

--	--	--	--	--	--	--	--	--	--	--	--

Torque control travel on flyweight assembly dimension a = mm Speed regulation At 1 mm less control rod travel

## B. Governor Settings

RQV

KHD 1 d

- 4 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque-control travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

## 300-1325 AB 898L

ca. 68	1350	15,0-18,0	-	-	-	ca. 12	200	7,5-9,0	250	0,3-1,2
	1430	8,3-13,0					300	4,9-7,1		
	1520	0 - 6,6					500	2,7-4,2		
	1600	0					890	0	1350	8,2
									-	-

## 300-1250 AB 898L

ca. 68	1300	14,5-17,6	-	-	-	ca. 12	200	7,3-9,0	250	0,3-1,3
	1380	6,8-12,4					300	4,9-7,1		
	1450	0 - 7,2					500	2,3-4,8		
	1540	0					840	0	1290	8,2
									-	-

## 300-1150 AB 898L

ca. 68	1160	15,0-18,0	-	-	-	ca. 12	200	7,3-9,0	250	0,3-1,3
	1220	8,2-13,6					450	2,7-4,1		
	1290	0 - 7,3					650	0,7-1,8		
	1370	0					800	0	-	-

## 300-1075 AB 898L

ca. 68	1160	15,0-18,0	-	-	-	ca. 12	200	7,5-9,0	250	0,3-1,2
	1240	8,0-13,2					300	5,1-7,0		
	1320	0 - 7,2					500	1,1-2,4		
	1400	0					710	0	1170	8,3
									-	-

## 300/725-1075 AB 931L

ca. 68	1075	15,0-17,3	ca. 48	700	11,6-16,5	ca. 12	140	6,8-8,2	200	0,2-0,8
	1100	11,0-15,4		800	7,0-11,4		300	4,7-6,1	400	1,9-2,1
	1160	0 - 7,4		900	1,7- 4,5		450	3,6-4,0	650	1,9-2,6
	1220	0		950	0		700	1,7-3,9	900	4,6-5,2
							830	0	1075	8,5
									-	-

## B. Governor Settings

RQV ..

KHD 1 d - 5 -

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-800/100 AB 973DL

Torque control travel a = 0,7 mm

ca. 50	1180	15,0-18,4	ca. 27	600	11,8-14,7	ca. 13.	150	8,4-11,5	200	0,5-1,2
	1250	6,8-12,0		700	7,6-10,3		250	5,7-8,8	600	3,2-3,6
	1300	0 - 7,6		840	0 - 2,4		420	0 - 3	1050	7,4-7,6
	1380	0		880	0		530	0	1170	8,3
									650	0
								400	0,7	

300-1325 AB 974 L

ca. 66	1325	15,0-17,8	-	-	-	ca. 10	150	6,6-8,0	1325	8,3
	1400	8,3-12,9					300	4,6-6,1		
	1480	0 - 6,8					450	2,7-3,8	-	-
	1560	0					600	1,8-3,2		
						860	0			

300-985/1325 AB 975L

ca. 68	1350	12,0-16,0	ca. 61	900	12,4-15,3	ca. 12	100	6,8-8,0	460	2,0-2,5
	1420	4,4-11,0		1000	5,4-8,1		250	5,6-7,2	1300	8,5
	1460	0 - 8,0		1100	0,5-1,0		400	3,3-4,8	—	—
	1560	0		1300	0,5-1,0		600	0,8-2,2		
				1380	0		710	0		

RQV 300-1325 AB976L

ca. 68	1350	15,2-17,8	-	-	-	ca. 12	100	min. 8	300	1,2-1,3
	1700	0 - 1					300	5,4-5,6	600	4,4-4,6
ca. 59	1375	9,4-10,4					400	1,5-3,7	1350	8,3
	1475	2,7-4,6					500	0 - 1	-	-

--	--	--	--	--	--	--	--	--	--	--

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Torque-control travel rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-1250 AB983DL, 990DL

Torque control travel a = 0,5 mm

ca. 66	1290	15,0-18,0	-	-	-	ca. 12	100	7,6-8,6	1290	8,3
	1370	7,5-12,7					300	5,2-6,6		
	1440	0 - 7,7					600	2,0-3,2	1200	0
	1530	0					850	0	600	0,5-0,6

300-1075 AB988DL

Torque control travel a = 0,5 mm

ca. 68	1100	15,0-18,0	-	-	-	ca. 12	100	6,2-8,0	1100	8,3
	1190	4,1-10,4					300	4,4-6,2		
ca. 66	1075	15,0-18,0	-	-	-		500	1,8-3,3	1075	0
	1140	8,0-13,0					720	0	500	0,5-0,6
	1200	0 - 8								
	1280	0								

RQV 300-1075 AB988DL

Torque control travel a = 0,5 mm

ca. 68	1160	15,0-18,0	-	-	-	ca. 12	200	7,5-9,0	250	0,3-1,2
	1240	8,0-13,2					300	5,1-7,0	700	4,0-4,5
	1320	0 - 7,2					500	1,1-2,4		
	1400	0					710	0	1080	0
								500	0,5-0,6	

RQV 1150 AB999L (V13274)

ca. 48	1100	14,6-20,5	-	-	-	-	-	-	1150	5,4
	1150	8,3-13,0								
	1200	0 - 4,5							-	-

RQV 300-1000 AB1006DL (V13121D)

Torque control travel a = 0,5 mm

ca. 68	1100	14,0-17,6	-	-	-	ca.12	200	7,5-8,9	250	0,3-1,1
	1180	6,2-12,0					300	4,5-7,0	600	3,8-4,4
	1250	0 - 6					450	1,0-2,3	1080	8,2
							650	0		
									1000	0
								600	0,5-0,6	

## B. Governor Settings

RQV

KHD 1 d -7-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Torque-control travel mm
1	2	3	4	5	6	7	8	9	10	11

RQV 300/525-750 AB1009L (V13157)

ca. 68	750	15,0-18,4	ca. 52	525	14,0-20,0	ca. 12	175	7,1-8,2	250	0,3-1,2
	800	4,2-11,0		600	7,9-12,2		300	4,0-6,3	400	1,9-2,1
	815	0-8,0		650	3,0-6,2		400	3,6-4,0	600	3,7-4,5
	850	0		700	0		500	0	760	8,3
									-	-

RQV 300-800/1325 AB1014L

ca. 46	1330	18,0-21,6	ca. 30	600	11,9-14,3	ca. 10	100	9,4-12,2	150	0,8-1,4
	1420	9,2-14,8		720	6,6-9,0		300	4,1-7,9	700	4,0-4,4
	1500	0-8		840	0-2,3		400	0-3	1020	7,4-7,5
	1590	0		880	0		510	0	1300	7,8
									1330	-

RQV 300/800-1150 AB1016L (V12264), 1021 (V13155)

ca. 66	1160	15,0-18,4	ca. 48	760	11,2-16,4	ca. 12	200	6,1-7,7	250	0,5-1,2
	1200	8,4-13,8		850	7,6-11,8		450	3,6-4,0	400	1,9-2,1
	1250	0-7,6		950	2,8-5,6		650	3,3-4,0	600	8,2
	1310	0		1030	0		900	0	1160	-
									-	-

RQV 300/650-900 AB1020L (V12263)

ca. 66	910	15,0-18,4	ca. 48	610	11,6-16,5	ca. 12	200	6,8-8,2	250	0,3-1,0
	980	0-7,5		700	6,0-9,8		400	3,6-4,6	450	1,9-2,1
	1020	0		790	0-2,0		600	1,8-4,0	500	8,3
				810	0		720	0	910	-
									-	-

RQV 300-1250 AB1026DL

Torque control travel a = 0,5 mm

ca. 68	1300	14,5-17,6	-	-	-	ca. 12	200	7,3-9,0	250	0,3-1,3
	1380	6,8-12,4					300	4,9-7,1	800	3,8-4,2
	1450	0-7,2					500	2,3-4,8	1290	8,2
	1540	0					840	0	1250	0
									500	0,5-0,6

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

300-1325 A8 B 1084L

ca.69	1325	16,0	without auxoliary spring	ca.23	300	6,0	1300	0
	1400	7,7			100	19,0-21,0		
	1450	1,0			300	5,7-6,3		
	1370	10,4-12,3			450	0,8-2,9		
	1430	2,8-6,0			600	0 -1,0		
	1550	0,3-1,0						
			with auxiliary spring					

300-1000 A7 B1002DL

ca.72	1000	16,0	without auxiliary spring	ca.23	300	6,0	980	0								
	1030	12,6			100	19 - 21										
	1070	5,4							300	5,7-6,3						
	1050	7,0-10,2									400	3,0-4,4				
													1100	2,0-4,4	550	0 - 1
with auxiliary spring																

300-1325 A8 B1002DL

ca.69	1325	16,0	without auxiliary spring	ca.25	300	6,0	1300	0
	1380	10,2			150	19 - 21		
	1420	5,4			300	5,7-6,3		
	1330	ca.10,5	with auxiliary spring		500	1,7-3,8	450	0,8-1,0
	1370	ca. 9,5			700	0 - 1		
	1520	0,3-1,0						





**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load delivery Test oil temp 40°C (104 F)		Rotational speed limitation <b>RQV</b> Control rod stop <b>RQ</b>		Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes
1	2	3		4	5	6	7

**Testoil-ISO 4113**
**F 6 L 413 F - 141kW/192PS / 2650/min**

1325	91,5-93,5	RQ:	600	1000	88,5-91,5	100	119-129
		RQV:	1340	800	87,5-90,5		

**F 8 L 413 F - 188kW/192PS / 2650/min**

1324	91,5-93,5	RQ:	600	1000	88,5-91,5	100	119-129
		RQV:	1340	800	87,5-90,5		

**F 10 L 413 F - 236kW/320PS / 2650/min**

1325	91,5-93,5	RQ:	600	1000	88,5-91,5	100	119-129
		RQV:	1340	800	87,5-90,5		

**F 12 L 413 F - 284kW/384 PS / 2650/min**

1325	91,5-93,5	RQ:	600	1000	88,5-91,5	100	119-129
		RQV:	1340	800	87,5-90,5		

Caution: These changed values apply to governors without torque control

**C. Settings for Fuel Injection Pump with Fitted Governor**

Full-load delivery Test oil temp 40°C (104 F)		Rotational speed limitation Control-rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7

192 PS / 2650 min - RQ 300/1325 AB 929 L

1325 91,5-93,5 600 400 max. 84,5 100 119-129

192 PS / 2500 min - RQ 300/1250 AB 987 DL

a = 0,2 mm

1250 91,5-93,5 600 700 92,5-94,5 100 119-129  
400 82,5-88,5

186 PS / 2500 min - RQ 300/1250 AB 929 L

1250 94,5-96,5 600 400 max. 84,5 100 119-129

176 PS / 2500 min - RQ 300/1250 ABV 12946 D

a = 0,3 mm

1250 85,5-87,5 600 1000 83,5-86,5 100 119-129  
700 86,5-89,5

168 PS / 2500 min - RQ 300/1250 ABV 12946 D

a = 0,3 mm

1250 75,5-77,5 600 1000 73,5-76,5 100 119-129  
700 71,5-74,5

176 PS / 2300 min - RQ 300/1150 ABV 12242 D

a = 0,35 mm

1150 83,5-85,5 600 1000 81,5-84,5 100 119-129  
700 85,5-88,5

160 PS / 2150 min - RQ 300/1075 ABV 12243 D

a = 0,35 mm

1075 82,5-84,5 600 1000 80,5-83,5 100 119-129  
700 83,5-86,5

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp. 40°C (104 F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. <u>141kW/192 PS / 2650/min</u> - RQV 300-1325 AB974L, 300-950/1325 AB975L								
1325	91,5-93,5	1365-1375*400	max.84,5		100		119-129	
2. <u>141kW/192 PS/2500/min</u> - RQV 300-1250 AB 13392D, 300-800/1250 ABV13776D								
1250	91,5-93,5	1290-1300*1000	91,0-94,0		100		119-129	a = 0,5mm
		700	91,5-94,5					770=4,5 (nur 13776D)
3. <u>137kW/186 PS/2500/min</u> - RQV 300-1250 ABV12248								
1250	90,5-92,5	1290-1300*400	max.84,5		100		119-129	
4. <u>130kW/176 PS/2500/min</u> - RQV 300-1250 AB983DL (V13122D) a = 0,5 mm								
1250	85,5-87,5	1290-1300*1000	83,5-86,5		100		119-129	
		400	78,5-82,5					
5. <u>107kW/145 PS/2400/min</u> - RQV 300-1200 ABV 12259D a =								
1250	71,5-73,5	1240-1250*1000	68,0-71,0		100		119-129	
		700	67,0-70,0					
6. <u>124kW/168PS / 2300/min</u> - RQV 300/800-1150 AB1021L (V12155)								
1150	84,5-86,5	1190-1200*			100		119-129	
7. <u>124kW/168 PS/2300/min</u> - RQV 300-1150 AB999L (V13274)								
1150	85,5-87,5	1190-1200*			100		119-129	
					1196		17- 20	
8. <u>101kW/137 PS / 1800/min</u> - RQV 300-900 ABV13156								
900	79,5-81,5	940-950* 400	max.82,5		100		119-129	
9. <u>101kW/137 PS/1800/min</u> - RQV 900 ABV 13273								
900	80,5-82,5	910	936 17 - 20		100		119-129	
10. <u>90kW/116 PS / 1500/min</u> - RQV 300/525-750 AB1009L (V13157)								
			RQV 750 ABV12507					
750	78,5-80,5	790-800*	400 max.76,5		100		119-129	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

1. 141 kW/192 PS / 2650/min - EP/RSV 300-1325 A 8 B 1084 L  
 1325 91,5-93,5 1365-1375\* 400 max. 82,5 100 119-129

2. 141kW/192PS / 2650/min - EP/RSV 300-1325 A 8 B 1002 DL  
 1325 91,5-93,5 1365-1375\* 400 max. 82,5 100 119-129

4.

5.

F 6 L 413 FW

6.1. 121kW/165PS / 2500/min - RQV 300-1250 ABV 13925D a = 0,5 mm  
 2. 108kW/147PS / 2500/min

1. 1250 79,5-81,5 1290-1300\* 800 78,0-81,0 100 119-129  
 2. 1250 74,5-76,5 1290-1300\* 800 71,0-74,0 100 119-129

7.1. 115kW/156PS / 2300/min - RQV 300-1150 ABV 13926 D a = 0,5 mm  
 2. 96kW/131PS / 2300/min

1. 1150 78,5-80,5 1190-1200\* 800 78,0-81,0 100 119-129  
 2. 1150 68,5-70,5 1190-1200\* 800 68,0-71,0 100 119-129

8.1. 101kW/137PS / 2150/min - RQV 300-1075 ABV 13927 D a = 0,5 mm  
 2. 91kW/124PS / 2150/min

1. 1075 73,5-75,5 1115-1125\* 800 74,0-77,0 100 119-129  
 2. 1075 67,5-69,5 1115-1125\* 800 68,0-71,0 100 119-129

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Checking values in brackets

\* 1 mm less control rod travel than col. 2

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 5.14

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**C. Settings for Fuel Injection Pump with Fitted Governor**

-13-

engine power Full load delivery Control rod stop Test oil temp 40°C (104 F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

1. 188kW/256PS / 2650/min - RQ 300/1325 AB 929 L (V 11708)  
1325 91,5-93,5 600 400 max. 84,5 100 119-129
2. 188kW/256PS / 2500/min - RQ 300/1250 AB 987 DL (V 13391 D) a = 0,2 mm  
1250 91,5-93,5 600 700 90,5-93,5 100 119-129  
400 82,5-88,5
3. 183kW/248PS / 2500/min - RQ 300/1250 AB 929 L (V 12241)  
1250 91,5-93,5 600 400 max. 84,5 100 119-129
4. 173kW/235PS / 2500/min - RQ 300/1250 ABV 12946 D a = 0,3 mm  
1250 85,5-87,5 600 700 83,5-86,5 100 119-129  
400 max. 84,5
5. 173kW/235PS / 2300/min - RQ 300/1150 ABV 12242 D a = 0,35 mm  
1150 87,5-89,5 600 1000 88,0-91,0 100 119-129  
700 88,0-91,0  
400 max. 84,5
6. 157kW/213PS / 2150/min - RQ 300/1075 ABV 12243 D a = 0,3 mm  
1075 82,5-84,5 600 1000 81,5-84,5 100 119-129  
700 84,5-87,5  
400 max. 84,5

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Checking values in brackets

\* 1 mm less control rod travel than col 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp 40°C (104 °F)		Rotational speed limitation  rev/min	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. 188kW/256PS / 2650/min - RQV 300-1325 AB 974 L (12247), 976 L (12630) AB 1014 L (13605), 13629 (→ 1014)								
1325	91,5-93,5	1365-1375*	400	max. 84,5	100	119-129	770	4,5mmRW
2. 188kW/256PS / 2500/min - RQV 300-1250 AB 990 DL (V 13392 D), 14020 D RQV 300-800/1250 ABV 13776 D a = 0,5 mm								
1250	91,5-93,5	1290-1300*	1000	91,0-94,0				
1250	91,5-93,5	1290-1300*	700	91,5-94,5	100	119-129		
3. 183kW/248PS / 2500/min - RQV 300-1250 AB 974 L (V 12248)								
1250	90,5-92,5	1290-1300*	400	max. 84,5	100	119-129		
4. 173kW/235PS / 2500/min - RQV 300-1250 AV 983 DL (V 13122 D) a = 0,5 mm								
1150	85,5-86,5	1290-1300	1000	83,5-86,5	100	119-129		
			700	86,5-89,5				
5. 173kW/235PS / 2300/min - RQV 300-1150 ABV 13777 D a = 0,5 mm								
1150	84,5-86,5	1190-1200*	1000	82,5-85,5	100	119-129		
			700	86,5-89,5				
6. 165kW/224PS / 2300/min - RQV 300/800-1150 AB 1021 L (13155)								
1150	84,5-86,5	1190-1200*	400	max. 84,5	100	119-129		
7. 165kW/225PS / 2300/min - RQV 1150 AB 999 L (V 13274)								
1150	85,5-87,5	1160			100	119-129		
					1196	17- 20		
8. 165kW/225PS / 2200/min - RQV 300-800/1100 AB 973 DL (V 13230 D) a = 0,7mm								
1100	85,5-87,5	1140-1150*	1000	84,0-87,0	100	119-129		
			700	90,0-93,0				
9. 132kW/180PS / 2150/min - RQB 300-1075 ABV 13944 D a = 1,2								
1075	71,5-73,5	1115-1125*	1050	70,0-73,0	100	119-129		
			800	83,0-86,0				
10. 134kW/182PS / 1800/min - RQV 300/650-900 ABV 13156								
900	79,5-81,5	910	400	max. 83,5	100	119-129		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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B16

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

11. <u>134kW/182PS / 1800/min</u> - RQV 900 ABV 13273								
900	80,5-82,5	910			100	119-129		
					936	17- 20		
12. <u>114kW/155PS / 1500/min</u> - RQV 300/525-750 AB 1009 L (V 13157)								
750	78,5-80,5	760	400	max. 82,5	100	119-129		
13. <u>114kW/155PS / 1500/min</u> - RQV 750 ABV 12507								
750	78,5-80,5	760			100	119-129		

**F 8 L 413 FW**

16. 1. <u>162kW/220 PS / 2500/min</u> - RQV 300-1250 ABV 13925 D								
2. <u>144kW/196 PS / 2500/min</u>								
1. 1250	79,5-81,5	1290-1300*	800	78,0-81,0	100	119-129		
2. 1250	74,5-76,5	1290-1300*	800	71,0-74,0	100	119-129		
17. 1. <u>153kW/208 PS / 2300/min</u> - RQV 300-1150 ABV 13926 D								
2. <u>129kW/175 PS / 2300/min</u>								
1. 1150	78,5-80,5	1190-1200*	800	78,0-81,0	100	119-129		
2. 1150	68,5-70,5	1190-1200*	800	68,0-71,0	100	119-129		
18. 1. <u>135kW/184 PS / 2150/min</u> - RQV 300-1075 ABV 13927 D								
2. <u>121kW/164 PS / 2150/min</u>								
1. 1075	73,5-75,5	1115-1125*	800	74,0-77,0	100	119-129		
2. 1075	67,5-69,5	1115-1125*	800	68,0-71,0	100	119-129		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp 40°C (104 F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		intermediate rotational speed Torque control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

1. 188kW/256PS / 2650/min - EP/RSV 300-1325 A 8 B 1084 L  
 1325 91,5-93,5 1365-1375\* 400 max.84,5 100 119-129

2. 188kW/256PS / 2500/min - EP/RSV 300-1325 A 8 B 1002 DL  
 1325 91,5-93,5 1365-1375\* 400 max.84,5 100 119-129

3. 147kW/200PS / 1900/min - EP/RSV 300-1000 A 7 B 1002 DL  
 A 7 C 1002 DL  
 950 79,5-81,5 990-1000\* 700 80,5-83,5 100 119-129  
 400 max. 84,5

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Checking values in brackets

\* 1 mm less control rod travel than col. 2

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D18

Testoil-ISO 4113



**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. 236kW/320PS / 2650/min - RQ 300/1325 (V11709)								
1325	91,5-93,5	600	400	max. 84,5	100	119-129		
2. 236kW/320PS / 2500/min - RQ 300/1250 AB984DL a = 0,2 mm								
1250	91,5-93,5	600	1000	91,0-94,0	100	119-129		
			700	91,5-94,5				
3. 228kW/310PS / 2500/min - RQ 300/1250 ABV12244								
1250	89,5-91,5	600	400	max. 84,5	100	119-129		
4. 217kW/295PS / 2500/min - RQ 300/1250 AB986DL (V12159D) a = 0,3 mm								
1250	86,5-88,5	600	1000	84,5-87,5	100	119-129		
			700	87,5-90,5				
5. 216kW/293PS / 2300/min - RQ 300/1150 ABV12245D a = 0,35 mm								
1150	84,5-86,5	600	1000	82,5-85,5	100	119-129		
			700	86,5-89,5				
6. 197kW/267PS / 2150/min - RQ 300/1075 ABV12246D a = 0,35 mm								
1075	83,5-85,5	600	1000	81,5-84,5	100	119-129		
			700	84,5-87,5				
7.								
8.								
9.								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

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**C. Settings for Fuel Injection Pump with Fitted Governor**

-18-

engine power Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
1. <u>236kW/320PS / 2650/min</u> - RQV 300-1325 AB898L (V12249)								
300-800/1325 ABV12271								
1325	91,5-93,5	1365-1375	400	max. 84,5	100	119-129		
2. <u>228kW/310PS / 2550/min</u> - RQV 300-1275 ABV13664D a = 0,5 mm								
1275	90,5-92,5	1315-1325*	1000	90,5-92,5	100	119-129		
			700	91,0-94,0				
3. <u>236kW/320PS / 2550/min</u> - RQV 300-1250 AB1026DL a = 0,5 mm								
1250	91,5-93,5	1290-1300*	1000	91,0-94,0	100	119-129		
			700	90,0-93,0				
4. <u>228kW/310PS / 2500/min</u> - RQV 300-1250 AB898L (V11962)								
1250	90,5-92,5	1290-1300*	400	max. 84,5	100	119-129		
5. <u>217kW/295PS / 2500/min</u> - RQV 300-1250 ABV13118D a = 0,5 mm								
1250	86,5-88,5	1290-1300*	1000	84,5-87,5	100	119-129		
			700	87,5-90,5				
6. <u>193kW/262PS / 2500/min</u> - RQV 300/850-1250 ABV12294								
1250	79,5-81,5	1290-1300*	400	max. 82,5	100	119-129		
7. <u>216kW/293PS / 2300/min</u> - RQV 300-1150 AB988DL (V13119D) a = 0,5 mm								
1150	84,5-86,5	1190-1200*			100	119-129		
			700	83,0-86,0				
			400	75,0-79,0				
8. <u>216kW/293PS / 2300/min</u> - RQV 300/800-1150 AB1016L (V12264)								
1150	84,5-86,5	1190-1200*	400	max. 82,5	100	119-129		
9. <u>206kW/280PS / 2300/min</u> - RQV 300-1150 AB898L								
1150	79,5-81,5	1190-1200*	400	max. 82,5	100	119-129		
10. <u>197kW/267PS / 2150/min</u> - RQV 300-1075 AB988DL (V13120D) a = 0,5 mm.								
1075	83,5-85,5	1115-1125*	1000	81,5-84,5	100	119-129		
			700	84,5-87,5				
			400	max. 82,5				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

E 30

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

11. 197kW/267PS / 2150/min - RQV 30C/750-1075 AB931L (V12575)

1075 83,5-85,5 1115-1125\* 400 max. 82,5 100 119-129

12. 184kW/250PS / 2000/min - RQV 300-1000 AB1006DL (V13121D)

a = 0,5 mm

1000 80,5-82,5 1040-1050\* 700 83,5-86,5 100 119-129

13. 184kW/250PS / 2000/min - RQV 300-1000 ABV13550

1000 80,5-82,5 1040-1050\* 400 max. 82,5 100 119-129

14. 168kW/228PS / 1800/min - RQV 300/650-900 AB1020L (V12263)

900 80,5-82,5 940-950\* 400 max. 82,5 100 119-129

15. 142kW/193PS / 1500/min - RQV 300/525-750 AB998L (V12262)

750 78,5-80,5 790-800\* 400 max. 82,5 100 119-129

F 10L 413 FW16. 1.202kW/275PS / 2500/min - RQV 300-1250 ABV13928D

a = 0,5 mm

2.180kW/245PS / 2500/min

1. 1250 79,5-81,5 1290-1300\* 800 78,0-81,0 100 119-129

2. 1250 74,5-76,5 1290-1300\* 800 71,0-74,0 100 119-129

17. 1.192kW/261PS / 2300/min - RQV 300-1150 ABV13929D

a = 0,5 mm

2.101kW/219PS / 2300/min

1. 1150 78,5-80,5 1190-1200\* 800 78,0-81,0 100 119-129

2. 1150 68,5-70,5 1190-1200\* 800 68,0-71,0 100 119-129

18. 1.168kW/228PS / 2150/min - RQV 300-1075 ABV13930D

a = 0,5 mm

1.61kW/219PS / 2150/min

1. 1075 73,5-75,5 1115-1125\* 800 74,0-77,0 100 119-129

2. 1075 67,5-69,5 1115-1125\* 800 67,0-70,0 100 119-129

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

021

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full-load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

1. 283kW/384PS / 2650/min - RQ 300/1325 AB930L (V11709)  
1325 91,5-93,5 600 400 max. 84,5 100 119-129
2. 283kW/384PS / 2500/min - RQ 300/1250 AB984DL (V13407D) a = 0,2 mm  
1250 91,5-93,5 600 1000 91,0-94,0 100 119-129  
700 91,5-94,5  
400 82,5-88,5
3. 274kW/372PS / 2500/min - RQ 300/1250 AB930L (V12244)  
1250 89,5-91,5 600 400 max. 84,5 100 119-129
4. 260kW/353PS / 2500/min - RQ 300/1250 AB986DL (V13159D) a = 0,3 mm  
1250 86,5-88,5 600 1000 84,5-87,5 100 119-129  
700 87,5-90,5  
400 max. 82,5
5. 259kW/352PS / 2300/min - RQ 300/1150 ABV 12245D a = 0,35 mm  
1150 84,5-86,5 600 1000 82,5-85,5 100 119-129  
700 86,5-89,5  
400 max. 82,5
6. 236kW/320PS / 2150/min - RQ 300/1075 ABV12246D a = 0,35 mm  
1075 83,5-85,5 600 1000 81,5-84,5 100 119-129  
700 84,5-87,5  
400 max. 82,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

B22

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

engine power Full load delivery Control rod stop Test oil temp 40°C (104 F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

1. 283kW/384PS / 2650/min - RQV 300-1325 AB898L (V12249)  
1325 91,5-93,5 1365-1375\* 400 max. 84,5 100 119-129
2. 283kW/384PS / 2500/min - RQV 300-1250 AB1026DL (V13408D) a = 0,5 mm  
1250 91,5-93,5 1290-1300\* 1000 91,0-94,0 100 119-129  
700 91,5-94,5
3. 274kW/372PS / 2500/min - RQV 300-1250 AB898L  
1250 89,5-91,5 1290-1300\* 400 max. 84,5 100 119-129
4. 260kW/353PS / 2500/min - RQV 300-1250 ABV 13118D a = 0,5 mm  
1250 86,5-88,5 1290-1300\* 1000 84,5-87,5 100 119-129  
700 87,5-90,5  
400 max. 82,5
- 5.1 246kW/335PS / 2500/min  
2 147kW/200PS / 2500/min - RQV 300-1250 ABV 13287D a = 0,55 mm  
1250 82,5-84,5 1290-1300\* 1000 80,5-83,5 fuel overquantity  
700 84,0-87,0  
1250 50,5-52,5 1000 50,0-53,1 100 119-129  
700 39,0-42,0
6. 243kW/330PS / 2500/min - RQV 300-1250 ABV 13621D a = 0,5 mm  
1250 78,5-80,5 1290-1300\* 1000 77,0-80,0 100 119-129  
700 73,0-76,0
7. 259kW/352PS / 2300/min - RQV 300-1150 AB898L, 1016L (V12264)  
1150 84,5-86,5 1190-1200\* 400 max. 82,5 100 119-129
8. 259kW/352PS / 2300/min - RQV 300-1150 AB988DL (V12118D) a = 0,5 mm  
1150 84,5-86,5 1190-1200\* 1000 82,5-85,5 100 119-129  
700 86,5-89,5  
700 86,5-89,5
9. 247kW/336PS / 2300/min - RQV 300-1150 AB962L  
1150 83,5-85,5 1190-1200\* 400 max. 82,5 100 119-129
10. 236kW/320PS / 2150/min - EQV 300/750-1075 AB931L (V12575)  
1075 83,5-85,5 1190-1200\* 400 max. 82,5 100 119-129

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

02.3

Testoil-ISO 4113

**C. Settings for Fuel Injection Pump with Fitted Governor**

-22-

engine power Full load delivery Control rod stop Test oil temp 40°C (104 F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

11. 236kW/320PS / 2150/min - RQV 300-1075 AB988DL (V12120D) a = 0,5mm  
ABV13162D

1075 83,5-85,5 1115-1125\* 1000 81,5-84,5 100 119-129  
700 84,5-87,5  
490 max. 82,5

12. 199kW/270PS / 2150/min - RQV 300-1075 ABV13945D a = 1,2mm

1075 71,5-73,5 1115-1125\* 1050 70,5-72,5 100 119-129  
800 83,0-86,0

13. 221kW/300PS / 2000/min - RQV 300-1000 AB1006DL (V12121D) a = 0,5 mm  
ABV13163D

1000 80,5-82,5 1040-1050\* 700 83,5-86,5 100 119-129

14. 200kW/272PS / 2000/min - RQV 300-1000 ABV 13550

1000 80,5-82,5 1040-1050\* 100 119-129

15. 202kW/275PS / 1800/min - RQV 300-900 ABV13549

300/650-900 ABV 12263  
900 80,5-82,5 940-950\* 100 119-129

16. 171kW/232PS / 1500/min - RQV 300-750 AB998L (V12262)

750 80,5-82,5 790-800\* 400 max. 82,5 100 119-129

F12 L 414 FW

17.1-243kW/330PS / 2500/min - RQV 300-1250 ABV13928 D a = 0,5 mm  
2-216kW/294PS / 2500/min

1. 1250 79,5-81,5 1290-1300\* 800 78,0-81,0 100 119-129  
2. 1250 74,5-76,5 1290-1300\* 800 71,0-74,0

18.1-230kW/313PS / 2300/min - RQV 300-1150 ABV13929D a = 0,5 mm  
2-193kW/262PS / 2300/min

1. 1150 78,5-80,5 1190-1200\* 800 78,0-81,0 100 119-129  
2. 1150 68,5-70,5 1190-1200\* 800 68,0-71,0

19.1-202kW/274PS / 2150/min -RQV 300-1075 ABV13930D a = 0,5 mm  
2-183kW/248PS / 2150/min

1. 1075 73,5-75,5 1115-1125\* 800 74,0-77,0 100 119-129  
2. 1075 67,5-69,5 1115-1125\* 800 68,0-71,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

En

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Testoil-ISO 4113

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 16,0 g

1. Edition

En

PE 10 A 90 D 320 LS 2362 RQ 250/1250 AB 1170-2 R  
Komb.-Nr. 0 400 649 228  
1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4  
0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315<sup>0</sup> ± 0,5<sup>0</sup> (+0,75<sup>0</sup>)

supersedes-

company: MAN

engine D 2538 M/MF  
188 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,5 - 1,6$  mm (from BDC)  $(1,45 - 1,65)$   $Zy1. 10$

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	11,5+0,1	10,3-10,4	0,3(0,45)			
250	7,4-7,6	0,9-1,5	0,25(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Test specifications		Test specifications		Test specifications		Control rod travel	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	600	12,1-12,2
								360-	400=2,0	870	11,9-12,1
								500	max.1,0	970	11,5-11,8

Torque-control travel  
on flyweight assembly dimension a =

0,6

mm

Speed regulation At  $1295-1310 \text{ min}^{-1}$

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	3a	4	5	6	7
1250	102,5-103,5 (100,5-105,5)	-		800	95,5-98,5 (93,5-100,5) 90,0-94,0 (88,0-96,0)	100	133,0-143,0 (130,0-146,0) =18,3-19,3 mm RW 6,5 mm RW
				500		250	

Checking values in brackets

10.83

Testoil-ISO 4113

C1

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①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 12,7 1

2.Edition

En

40

PE 8 A 95 D 410 LS 2451  
Komb.-Nr. 0 400 648 116

RQV 300-1150 AB 1044 DL

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

0 -45 -90 -135-180-225-270-315° ±0,5° (±0,75°)

supersedes 9.82

company KHD

engine F 8 L 413 FW

153 kW (208 PS)

/ 2300 min<sup>-1</sup>

Change-over point

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)  
2,00-2,10 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1150	9, -9,2	7,9 - 8,1	0,3(0,6)			
300	5,9-6,1	0,9 - 1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca.11	100	min.7,5	300	1,4-1,6
ca.64	8,1	1190-1200					300	5,9-6,1	750	4,0-4,3
	4,0	1225-1255					540-600	= 2,0		
	1350	0- 1,0					750	0,1	1190	8,5
		**				320-400				
						3a				

Torque control travel a = mm

\*\* Set control-rod stop to contact at 600 min/!

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1150	78,5-80,5 (76,5-82,5)	1190-1200*	800	77,5-81,0 (76,0-83,0)	100	119-129	1150	9,1-9,2	
							350	9,4-9,6	
							500	9,5-9,6	
						100-220 (80-240)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

9.83

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C2

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 4,1 c 2

1. Edition

En

PES 4 A 80 D 410/3 RS 2523 RSV 325-1250 A 8 B 540-1 L  
Komb.-Nr. 0 400 864 058

supersedes  
KHD  
comp. F 4 L 913  
engine

Road-building machine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,6+0,1	6,9-7,0	0,25(0,4)			
325	8,2-8,4	1,0-1,6	0,2 (0,35)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 17	325	6,5	1250	11,6-11,7
		X = 4,0					100	min. 19,5	500	12,1-12,2
							325	6,9-7,1	965	11,8-12,0
							630-690	= 2,0		
ca. 56	10,6	1290-1300								
	4,0	1390-1420								
2a	1555	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to 1 rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3		4	5	6	7	8	9
250	68,5-69,5 (67,0-71,0)	1290-1300*	800	64,5-66,5 (62,5-68,5)		-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.83

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C3

C3

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,0 b 3

1. Edition

En

PE 6 P 110 A 320 RS 260 Z RSV 250-1250 P0/374/2 R

Komb.-Nr. 0 401 876 190

supersedes

company Volvo-Penta

engine TAMD 70 D

206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8-2,9$  mm (from BDC)  
(2,75-2,95)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,9+0,1	14,3-14,5	0,4 (0,8)			2,5 ± 0,1
250	5,9-6,1	1,1-1,5	0,25 (0,55)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 17	250	5,5	-	-
ca. 47		x = 4,5					100	min. 20,0		
	10,9	1295-1305					250	5,9-6,1		
	4,0	1340-1370					430-490	= 2,0		
2a	1450	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to : rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3		4	5	6	7	8	9
LDA	1,2 bar	1295-1305 *	LDA	0 bar		100	160,0-200,0	0 250	5,9-6,1
1000	143,0-145,0 (140,0-148,0)		1000	86,0-89,0 (83,0-92,0)			= 20,0 21,0 mm RW		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

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# D. Adjustment Test for Manifold Pressure Compensator

PEN 7,0 b 3 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	bar	Gauge pressure =	bar mm (1)
PE 6 P .. RS 260 Z +RSV.. P0/374/2R	1,0	0,36	11,7 - 11,8 8,6 - 8,7	

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 FOR 5,9 d  
4. Edition

En

PES 6 A 90 D 210 RS 2628 RSV 325-1200 AOB 2140 L  
Komb.-Nr. 0 400 866 104 AOC 2140 L

supersede 6.83  
company Ford  
engine Dover 363 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

At port closing the locating pin must engage in the slot of the printer.

Port closing at prestroke 2,7-2,8  
(2,65-2,85) mm (from 800)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1175	11,5+0,1	8,4 - 8,5	0,3(0,45)			
350	5,1-5,3	0,5 - 1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 38	350	4,7	-	-
	X =	4,0					100	min. 19,0		
ca. 67	10,5	1240-1250					350	5,1-5,3		
⑤	4,0	1375-1405					490-5	50 = 2,0		
	1540	0,3 - 1,7					625	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1240-1250 *	LDA	0 bar	100	76,0 - 90,0	-	-	
1175	8 3,5-84,5 (8 1,5-86,5)		500	49,0 - 51,0 (47,0 - 53,0)		(73,0-93,0) = 19,0-21,0 mm RW			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.83

Testoil-ISO 4113

C6

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# D. Adjustment Test for Manifold Pressure Compensator

FOR 5,9 d -2-

Test at n = 1175 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel - diminution difference mm (1)
	Gauge pressure - bar	Gauge pressure -	bar	
PES 6 A ..RS 2628 with..A0B 2140 L	0,7			11,5 - 11,6
		0		10,1 - 10,2
		0,48		11,1 - 11,2
		0,30		10,2 - 10,4

Notes

(1) when n

rev/min and  
gauge pressure -

bar ( - maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 1 g 3

6. Edition

En

PES 4 A 85 D 410/3 RS 2638

RSV 325-1150 A 8 B 2168 L

A8C 2168 L

supersedes 9.83

company KHD

BF 4 L 913

engine 66 kW (90 PS)

/ 2300 min<sup>-1</sup>

tractor DX 92 (1)

60 kW (82 PS)

/ 2300 min<sup>-1</sup>

tractor DX 86 (2)

BF 4 L 913 T

Komb.-Nr. 0 400 864 054

1 - 3 - 4 - 2 je 90° ± 0,5° (+ 0,75°)

Symbol S 29 =

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6  
(2,45-2,65)

mm (from BDC)

Symbol S 28 =

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1150	11,8±0,1	8,2 - 8,3	0,3(0,45)	10,6±0,1	7,5 - 7,6	
325	7,7-7,9	0,9 - 1,5	0,2(0,4)	7,7-7,9	1,0 - 1,6	

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees 7 rev/min 8			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm/rev/min 3					Control rod travel mm 9				
loose	800 0,3 - 1,0 x = 4,0		-	-	-	ca. 29	325 7,3		1150 11,8±0,1	
ca. 53	10,8 1190-1200 4,0 1325-1355 1495 0,3 - 1,7						100 min. 19,5 325 7,7-7,9 700-760 = 2,0		500 12,3±0,1 965 12,0±0,2	
2a										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40 °C (104 °F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel rev/min mm 8 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7			
(1) 1150	82,0-83,0 (80,0-85,0)	1190-1200*	800	79,0-82,0 (76,5-84,5)		100	108,5- 118,5 = RW 16,9 - 17,4mm	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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11.83

**B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed		③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min					rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 26	325	7,0	1150	10,5+0,1
	x	= 4,0					100	min. 19,0	500	11,2+0,1
ca. 36	9,6	1220-1230					325	7,4-7,6	900	10,9+0,3
	4,0	1325-1355					720-780	= 2,0		
②a	1475	0,3-1,7								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤	④a Idle stop	
Test oil temp. 40°C (104°F)									
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
(2) 1150	74,5-75,5 (72,5-77,5)	1220-1230*	800	65,5-68,5 (63,5-70,5)	100	108,5-118,5	-	-	

\* 1 mm less control rod travel than col

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113****B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Control-lever deflection in degrees	Lower rated speed		③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min					rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

C. Settings for Fuel Injection Pump With Pilot Control								
②b Full-load stop		⑥ Rotational-speed limitat. Note: changed to ... rev/min	③a Fuel delivery characteristics		Starting fuel delivery		⑤	④a Idle stop
Test oil temp. 40°C (104°F)			Idle					
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

\* 4 mm less control rod travel than col.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 9,5 b

1. Edition

En

PE 6 AM 80 B 310 RS 21 RQ 250/1075 A 314 D  
RS 2002 A 386 D

supersedes 3.66  
company KHD  
engine F 6 L 714 A

"diesel" = flap touching  
"gasoline" = flap free-standing

( → .. A 314 D)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 : 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	7,4 - 7,8	0,4			
	9	3,9 - 4,7				
	15	10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor Settings

Checking of slider PRG check Control rod travel rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	2		4		6		8		9		12
1050	14,0-14,8	1050	14,4	1100 1120 1140 1190	14,2-14,4 4,5-12,6 0 - 9,0 0	440	0	200 250 300 340	7,4-8,1 4,8-7,5 0,6-3,8 0	400 600 800	16,0-16,2 15,5-15,9 14,5-14,9

Torque-control travel on flyweight assembly dimension a = 0,5 mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	2				5		7
1050	(diesel) 72,5 - 74,5 (gasoline)			800	74,5 - 77,5	100	mind. 9,9
1050	78,5 - 82,5	400		600	75,0 - 78,0		

Checking values in brackets

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C10



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 h

1. Edition

En

PES 6 MW 80/720 RS 1015 RQV 300-1600 MW 47

0 403 446 142

1 - 5 - 3 - 6 - 2 - 4

0 - 60-120-180-240-300

supersedes-

company Iveco-Fiat

engine 8060.24.670

121 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) RW 9 - 12 mm  
(2,05-2,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,2+0,1	6,0-6,2	0,35(0,6)			
300	7,3-7,4	1,05-1,45	0,35(0,55)			
1600	11,2+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1640 1850	15,2-17,8 0 - 1,0				ca. 16	100 300	min.8,9 7,3-7,4		
ca. 64	10,2 4,0	1640-1650 1775-1805				330-800				

Torque control travel a = mm

Test electrically unlocked starting delivery with 24 V.

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational speed limitation intermediate speed rev/min 3	Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6	Torque-control travel rev/min 8	Control rod travel mm 9
cm <sup>3</sup> /1000 strokes 2	cm <sup>3</sup> /1000 strokes 5	cm <sup>3</sup> /1000 strokes 5b	cm <sup>3</sup> /1000 strokes 7	cm <sup>3</sup> /1000 strokes 8	cm <sup>3</sup> /1000 strokes 9	cm <sup>3</sup> /1000 strokes 10	cm <sup>3</sup> /1000 strokes 11
1000	60,0-62,0 (58,5-63,5)	1640-1650*	1600	69,0-73,0 (67,0-75,0)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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C.A.A.

C11

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5g

1. Edition

En

Testoil-ISO 4113

PES 6 MW 90/720 RS 1015 RQV 375-1600 MW 49  
0 403 446 146

supersedes -

company: IVECO-Fiat  
engine 8062.24.668  
140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,50-2,60 \\ (2,45-2,65) \end{matrix}$  mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,9 <sup>+0,1</sup>	7,6-7,8	0,35(0,6)			
300	8,3 <sup>+0,1</sup>	1,0-1,4	0,35(0,55)			
1600	11,9 <sup>+0,1</sup>		0,5 (0,7)			
500	10,4 <sup>+0,2</sup>					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1640 1950	15,2-17,8 0-1,0				ca. 16	375 100	8,3-8,4 min.9,0		
ca.63	10,9 4,0	1640-1650 1810-1840				390-880				

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,5 bar 76,0-78,0 (74,0-80,0)	1640-1650*	LDA 1600	0,5 bar 82,0-86,0 (80,0-88,0)	200	160,0-180,0 (157,0-183,0)		
			LDA 500	0 bar 42,5-44,5 (40,5-46,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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## D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)	
RS 1015 with RQV..MW 49	0,5		11,9 - 12,0	
		0	10,4 - 10,5	
		0,21	11,5 - 11,6	
		0,18	10,8 - 10,9	

Notes

(1) when n

rev/min and  
gauge pressure -

bar ( - maximum full load control rod travel)

**Testoil-ISO 4113**

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8k

5. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016

RQV 300-1300 MW 25

Komb.-Nr. 0 403 446 123

supersedes 11.82

company RVI

engine MIDR06.02-12  
125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,00-3,10$  mm (from BDC) RW =  $9,0 - 12,0$  after port closing.  $10,5^\circ$

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,2+0,1	9,0-9,2	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55)			
900	11,2+0,1		0,5 (0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300 1600	15,2-17,8 0 - 1,0				ca. 13	200 300	max. 7,5 5,9-6,0		
ca. 62	10,2 4,0	1345-1355 1455-1585				340-600				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1300	0,67 bar 90,0-92,0 (88,0-94,0)	1345-1355*	LDA 900	0,67 bar 88,0-92,0 (86,0-94,0)	100 300	min. 100,0 9,5 - 13,5 (7,0 - 16,0)		
			LDA 500	0 bar 59,0-61,0 (57,0-63,0)	100-230 (80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
11.83

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
 XXXXX  
 XXXXX

Pump, governor	Setting	Measurement		Control rod travel diminution difference
		Gauge pressure =	Gauge pressure =	
		bar	bar	mm (1)
RS 1016 mit MW25	0,25			10,8 - 10,9
			0,67	11,2 - 11,3
			0	10,2 - 10,3
			0,22	10,3 - 10,4

Notes:

(1) when n =

rev/min and  
gauge pressure =

ba: (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 f

2. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1016 RQV 300-1400 MW 25-2

0 403 446 129

supersedes -

company RVI

engine

MIDR 06.02-12

125 kW (170 PS)

1 - 5 - 3 - 6 - 2 - 4 \* Start of delivery mark is 8° after  
0 -60 -120-180-240-300 start of delivery at control-rod  
+ travel 10,5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BDC) RW 9,0-12,0 mm  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,1+0,1	9,1 - 9,3	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,3+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400 1650	15,2-17,8 0-1,0	-	-	-	ca. 13	300 200	5,8-5,9 max. 4,4		
ca. 62	10,1 4,0	1440-1450 1550-1580				3a	490-550 = 2,0			

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm <sup>3</sup> /1000 strokes		Starting fuel delivery Idle switching point ⑥ rev/min cm <sup>3</sup> /1000 strokes		Torque-control travel ⑤ rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9
LDA 1400	0,5 bar 91,0-93,0 (89,0-95,0)	1440-1450*	LDA 900	0,5 bar 86,5-90,5 (84,5-92,5)	100	94,0-104,0 (91,0-107,0)		
			LDA 500	0 bar 53,5-55,5 (51,5-57,5)	100-230 (80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel	diminution difference
	Gauge pressure - bar	Gauge pressure - bar	bar	mm	(1)
RS 1016 with RQV..MW 25-2	0,12				9,8 - 9,9
		0,16			10,6 - 10,7
		0			9,4 - 9,5
		0,5			11,1 - 11,2

Notes

(1) when n

rev/min and  
gauge pressure

bar ( maximum full load control rod travel)

**Testoil-ISO 4113**

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 L

3. Edition

En

PES 6 MW 100/320 RS 1108  
RQV 350-1300 MW 45

0 403 446 140

Test-pressure line  
1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes 8.83  
company IHC  
engine DT 466 B  
143,5 kW

Test oil ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10 mm (from BDC) RW = 9,0-12,0 mm  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	11,7+0,1	9,55-9,75	0,35(0,6)			
350	5,9-6,0	1,6-2,0	0,35(0,55)			
1300	11,7+0,1		0,65(0,7)			
500	9,0-9,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	8,0 0,1	1440-1505 1550	-	-	-	ca. 14	100 350	min. 9,0 5,9-6,0		
ca. 61,5 ± 2,5	10,8 4,0	1360-1380 1475-1485				380-700 ③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)	1360-1380*	LDA 1300	0,9 bar 99,5-103,5 (97,5-105,5) LDA 0 bar 52,5-54,5 (50,5-56,5)	100 350 220-280 (210-290) 100 (80)	RW 19-21 140-180 (137-183) 16,0-20,0 (13,5-22,5)		Locking Unlocking

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
RS 1108 with MW 45	0,9		11,7 - 11,8
		0	9,0 - 9,1
		0,2	9,5 - 9,6
		0,57	11,2 - 11,3

Notes

(1) when n

rev/min and  
gauge pressure

bar ( - maximum full load control rod travel)

### Notes:

- Carry out pump adjustment only with original overflow valve and IH hose with restriction of 1.2 mm diameter.
- Adjust locking prior to sleeve check.
- Do not drive at more than n = 500 1/min in unlocked condition.
- Set low idle<sup>2</sup> at stop screw.
- Set shutoff stop 1.5 - 2.0 mm before stop.

**Testoil-ISO 4113**

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 IHC 7,6 n

2. Edition

En

PES 6 MW 100/320 RS 1112  
RQV 350-1300 MW 46  
0 403 446 141  
Test-pressure line  
1 680 750 008

Nozzle-and-holder assembly  
1 688 901 016 (207 + 3 bar)

supersedes 9.83  
company IHC  
engine DTI-466 C  
154,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 4,00-4,10 mm (from BDCRW = 9,0 - 12,0)  
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	10,5+0,1	10,3-10,5	0,35(0,6)			
350	5,4-5,5	1,8-2,2	0,35(0,55)			
1300	10,5+0,1		0,65(0,6)			
500	8,4+0,1					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	8,0 0 - 1	1440-1505 1600	ca. 21±2,5	595- 605	1,9-2,1	ca. 14	100 350	min. 9,0 5,4-5,5		
ca. 47,5 +2,5	4,0	1470-1480		435- 465	7,9-8,1	370-650				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300	0,9 bar 107,0-111,0 (105,0-113,0)	100	RW 19-21 140-180 (137-183)	
			LDA 500	0 bar 63,5-65,5 (61,5-67,5)	350	18,0-22,0 (15,5-24,5)	
					220-280 100	(210-290) (80)	Locking Unlocking

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

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## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev./min. decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel - diminution difference	
	Gauge pressure =	bar	Gauge pressure =	bar	mm (1)
RS 1112 mit MW 46	0,9 bar				10,5 - 10,6
			0		8,4 - 8,5
			0,28		9,0 - 9,1
			0,51		10,0 - 10,1

### Notes

(1) when n =

rev./min and  
gauge pressure =

bar (= maximum full-load control rod travel)

### = Notes:

- Set pump only with original overflow valve and IH hose with restriction 1.3 mm diameter.
- Before testing the sleeve position, first set interlock.
- When unlocked, n = 500 1/min is maximum speed.
- Set low idle at stop screw.
- Set shutoff stop 1.5 - 2.0 mm before shutoff.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 8,8 f

1. Edition

En

PES 8 MW 100/720 RS 1113 RQV 250-1400 MW 37-2

0 403 448 119

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2

0 - 45- 90-135-180-225-270-315

supersedes

company Perkins

engine TV 8.5 40 M

242 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

FB mark is at RW 10.5 mm

after FB and 17° NW

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10  
(2,95-3,15) mm (from BDC) RW = 9 - 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	13,8+0,1	11,9-12,1	0,35(0,6)			
250	8,2-8,3	1,4-1,8	0,35(0,55)			
900	13,8+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400 1600	15,2-17,8 0 - 1,0				ca. 15	100 250	min.9,7 8,2-8,3		
ca. 64	12,8 4,0	1450-1460 1560-1590				270-500				
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)		Fuel delivery characteristics high idle speed (5b) (5a)		Starting fuel delivery idle switching point (8)		Torque-control travel (5) Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3		4	5	6	7	8	9
1400	119,0-121,0 (117,0-123,0)	1450-1460*		900	115,0-119,0 (112,5-121,5)	100	90,0-100,0 (87,0-103,0)		
						250	14,0-18,0 (11,5-20,5)		
						100-180	(80-200)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

Testoil-ISO 4113

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C22

C22

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 PEN 7,0 b

4. Edition

En

Testoil-ISO 4113

PE 6 P 110 A 320 RS 260

RS 260 Y

EP/RSV 250-1250 P0/374/2 R

supersedes 40.78  
company Volvo-Penta  
engine THAMD 70 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,8 + 0,1$  mm (from BDC) (Checking tolerance  $+0,15$   
 $-0,05$ )

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	14,3 - 14,8	0,6			2,5 ± 0,1 ** (max. 2,2-2,9)
500	9	8,0 - 9,2				
	12	14,7 - 16,4				
	15	20,2 - 22,3				
250	6	0,9 - 1,3	0,25			

Adjust the fuel delivery from each outlet according to the values in

\*\* In case valve-spring spread is higher, change the initial tension accordingly.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 47	1250	16,0	without auxiliary spring			ca. 19	250	6,0	-	-
	1300	10,8					100	19-21		
	1330	6,3					250	5,7-6,3		
							400	1,7-3,9		
⑤	1300	9,5-12,0	with auxiliary spring				560	0 - 1		
	1360	3,2- 5,5								
	1460	0,3- 1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	rev/min	cm <sup>3</sup> /1000 strokes	5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	5	6	7	8	9
250	LDA 1,2 bar		LDA	0 bar					
1000	149,0-152,0	1295-1305 *	1000	76,0 - 81,0		100	160 - 190		
						250	11 - 15		
						Streug. max. 2,5)	**		
	(increase by 3,0 cm <sup>3</sup> )								./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.85

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023

023

The numbers denote the sequence of the tests

## B. Governor Settings

PEN 7,0 b

-2-

Testoil-ISO 4113

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 47	1250	16,0	without auxiliary spring			ca. 19	250	6,0	-	-
	1300	10,8								
	1330	6,8								
	1300	9,5-12,0	with auxiliary spring				100	19 - 21		
1360	3,2- 5,5	250				5,7-6,3				
②a	1460	0,3- 1,0				400	1,7-3,9			
						560	0 - 1			

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ Idle stop	
Test oil temp 40°C (104°F)		Note changed to )							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
	LDA 1,2 bar			LDA	0 bar	100	160-190		
260Y						250	11- 15		
1000	138,0-140,0	1295-1305*	1000	86,0-89,0		dispersion max. 2,5 **			

Checking values in brackets

\* 1 min less control rod travel than col 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference (1)
260 with 374/2R	0,78 - 0,81	min 0,04	
260Y with 374/2R	1,00 - 1,03	0,14 - 0,27	

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

En

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,4 a

4. Edition

En

Testoil-ISO 4113

PES C P 120 A 320 LS 429

RQV 250-1100 PA 582 (1)

superse 7583

company MAN

engine D2566 MKUL  
235 kW (320 PS)

Komb.-Nr. 0 402 046 223 (1)  
0 402 046 222 (2)

RQ 250/1100 PA 581 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,9 - 3,1$  mm (from BDC) Zy1.6  
(2,95 - 3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,9 +0,1	22,0 - 22,4	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

RQV .. PA 582

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8				ca. 13	100	min.7,8	250	1,6-1,7
ca. 68	10,4	1140-1150					250	6,2-6,4	500	4,0-4,3
	4,0	1225-1255							800	5,5-5,7
	1400	0 - 1,0				355-475			1100	8,1

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 750	1,0 bar 220,0-224,0 (217,0-227,0)	1140-1150*	LDA 1100	1,0 bar 185,0-191,0	100	215,0-235,0	1100	11,4
			650	212,0-218,0	250	12,0- 18,0	750	12,9
			LDA 500	0,29 bar 138,0-144,0			895	12,5
			LDA 500	0 bar 115,0-119,0			980	11,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

±0.83

\* Checking tolerance ± 3 cm<sup>3</sup>

D1

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21

## B Governor Settings

RQ.. PA 531

MAN 11, + a

- 2 -

(2)

Check rod travel PAG (mm)		Full load speed regulation				Idle speed regulation				Torque control	
Setting (1)		Setting (2)		Test specifications (4)		Setting (3)		Test specifications (5)		Setting (3)	
rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm	rev/min	mm
600	19,2-20,8	600	20,0	10,4	1145-1160	250	6,3	100	min.7,8	1100	11,4-11,5
VH = max. 46°				4,0	1185-1215			250	6,2-6,4	1005	11,7-12,0
				1300	0 - 1,0					925	12,5-12,7
								335-375	=2,0mm	750	12,9-13,0

Torque control travel 0,55 mm  
In flyweight assembly dimension A  
Speed regulation 1145 - 1160 min<sup>-1</sup>  
1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40 °C / 104 °F		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm - 1000 strokes	rev/min	cm - 1000 strokes	rev/min	cm - 1000 strokes	rev/min	cm - 1000 strokes / mm
LDA	1,0 bar	-	-	LDA	1,0 bar	100	215,0-235,0
750	220,0 - 224,0 (217,0 - 227,0)			1100	185,0 - 191,0		
				650	212,0 - 218,0		
				LDA	0,29 bar		
				500	138,0 - 144,0		
				LDA	0 bar		
				500	115,0 - 119,0		

Checking values in brackets

\* Checking tolerance  $\pm 3 \text{ cm}^3$

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min  
decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod position difference
	Gauge pressure bar	Gauge pressure bar	mm
..LS 429 mit RQV..PA 582 und RQ..PA 581	1,0	0 0,29 0,58	12,9 - 13,0 9,6 - 9,7 10,5 - 10,6 12,3 - 12,5

Notes

(1) when n =

rev/min and  
gauge pressure

bar = maximum full-load control rod travel

En



②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,9 a 2

1. Edition

En

PES 6 P 120 A 720 LS 470-1 RQ 250/110<sup>n</sup> PA 679  
Komb.-Nr. 0 402 046 289

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes  
company MAN  
engine D2866 KUL  
265 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC Zyl. 6; RW=9,0-12,0 mm)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	12,7+0,1	23,0-23,2	0,5(0,9)			
250	5,4-5,6	1,2-1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,9	1145-1160	250	5,5	100 min.7,0	750	12,7-12,8	
VH= max. 46°				4,0	1185-1215			250 5,4-5,6	1100	11,9-12,0	
				1350	0-1,0			320-360=2,0	975	12,3-12,5	
									1020	11,7-12,0	

Torque-control travel  
on flyweight assembly dimension a =

0,4

mm

Speed regulation At

1145-1160 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7	
LDA	1,0 bar	-		LDA	0,4 bar	100	225,0-245,0
750	230,0-232,0			500	182,0-188,0		(221,0-249,0)
	(227,0-235,0)				(179,0-191,0)		
LDA	1,0 bar			LDA	0 bar	250	12,0-18,0
1100	218,0-224,0			500	128,0-130,0		(9,0-21,0)
	(215,0-227,0)				(125,0-133,0)		

Checking values in brackets

12.83

Test oil 180 4113

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D3

# D. Adjustment Test for Manifold Pressure Compensator

MAN 11,9 a 2

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel		diminution difference
		Gauge pressure - bar	Gauge pressure - bar	mm	(t)	
PES 6 P..LS 470-1 +RQ..PA 679	1,0		0			12,7-12,8
			0,40			9,4-9,5
			0,19			11,2-11,3
						9,9-10,3

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 19,1 k

4. Edition

En

PE 12 P 110 A 320 LS 832  
Komb.-Nr. 0 401 840 060

RQV 350-1150 PA 476 R

supersedes 4.82  
company Daimler-Benz  
engine OM 404 A

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12  
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>3,2-3,3</sup>  
(3,15-3,35) mm (from BDC) <sup>7y1</sup> 12; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,8+0,1	13,4-13,6	0,4(0,8)			
350	7,4-7,6	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sieve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.18	100 350	min.8,6 7,0-7,2	300 580	0,9-1,1 3,5-3,8
ca.60	11,8 4,0 1450	1185-1195 1295-1325 0-1,0				3a	615-675 = 2,0		870 1150	5,2-5,5 7,8

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar 134,0-136,0 (131,5-138,5)	1185-1195*	LDA 500	0 bar 122,0-124,0 (119,0-127,0)	100	130,0-150,0 (126,0-154,0)	1130 700 970 1070	12,8+0,1 13,1+0,1 13,0+0,1 12,8+0,1
			LDA 700	0,7 bar 136,0-140,0 (133,0-143,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

Testoil ISO 4113

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D5

# D. Adjustment Test for Manifold Pressure Compensator

MB 19,1 k

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	bar Gauge pressure =	bar mm	(1)
PE 12 P...LS 832	0,70			13,1 - 13,2
+ RQV..PA 476 R		0		12,4 - 12,5
		0,39		12,9 - 13,0
		0,31		12,5 - 12,7

## Notes

(1) when n =

rev/min and gauge pressure =

bar (0 = maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ② and Governors

PE 12 P 110 A 520 LS 838 RQ 250-950 PA 583  
Komb.-Nr. 0 401 840 076

supersedes—  
company MAN  
engine D 2542 MTE

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12  
0-15-60-75-120-135-180-195-240-255-300-315°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>3,0-3,1</sup> (2,95-3,15) mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
880	11,4+0,1	15,4-15,6	0,4(0,8)			
250	3,8-4,0	1,3-1,9	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

Test oil ISO 4113

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	10,4 4,0 1100	925-940 965-995 0-1,0	250	3,9	100 250 290-330 = 2,0	min.5,4 3,8-4,0 2,0	880 550	11,4-11,5 11,4-11,6

Torque-control travel  
on flyweight assembly dimension a =

0

mm

Speed regulation: At

965-995 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
880	154,0-156,0 (151,0-159,0)	-	-	-	-	100	150,0-170,0 (146,0-174,0)

Checking values in brackets

12.83

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 17,4 a 2

1. Edition

En

PE 10 P 110 A 520/4 LS 846  
Komb.-Nr. 0 401 849 171

RQ 250/1150 PA 659-1

supersedes-

company MAN

D 2540 MT

engine

323 kW (439 PS)

1-8-7-6-3-5-2-10-9-4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

3,0-3,1  
(2,95-3,15)

mm (from BDC) Zyl. 10

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,9+0,1	14,0-14,2	0,4(0,8)			
250	6,9-7,1	1,1-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

Testoil ISO 4113

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Test specifications		Test specifications		Test specifications		Test specifications	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,9	1195-1210	250	7,0	100	min. 8,5	1150	11,9-12,0
VH =	max. 46°			4,0	1300-1330			250	6,9-7,1	600	11,9-12,1
				1450	0-1,0			350-390	= 2,0		

Torque-control travel  
on flyweight assembly dimension a =

0

mm

Speed regulation At

1195-1210 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm
1	2	3	3a	4	5	6	7
LDA	0,9 bar		-	LDA	0,9 bar	100	145,0-175,0
1150	140,0-142,0 (137,0-145,0)			750	134,0-138,0 (131,0-141,0)		
				LDA	0 bar		
				500	115,0-118,0 (112,0-121,0)		

Checking values in brackets

12.83

D8

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung  
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D8

# D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 a 2

- 2

Test at n 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump governor	Setting	Measurement		Control rod travel	Diminution difference
	Gauge pressure =	bar	Gauge pressure =	bar mm (1)	
PE 10 P..LS 846 + RQ..PA 659-1	0,90				11,9 - 12,0
			0		11,1 - 11,2
			0,38		11,7 - 11,8
			0,33		11,3 - 11,5

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (at maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 a 4  
1. Edition

En

PE 10 P 110 A 520/5 LS 846 RQV 250-1000 PA 677  
Komb.-Nr. 0 401 849 181  
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4  
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes  
company MAN  
engine D 2540 MTF 360  
287 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0-3,1$  mm (from BDC) Zyl. 10; RW = 9,0-12,0 mm  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,1+0,1	16,3-16,5	0,4(0,75)			
250	6,9-7,1	1,2-1,3	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 12	100	min. 8,5	350	2,0-2,5
ca. 63	11,2 4,0 1300	1040-1050 1170-1200 0-1,0					250	6,9-7,1	800	6,5-6,7
							400-460=2,0		1000	7,8

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,0 bar 163,0-165,0 (160,5-167,5)	1040-1050*	LDA 1000	1,0 bar 149,0-153,0 (146,0-156,0)	-	-	-	-
			LDA 500	0 bar 105,0-107,0 (102,5-109,5)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
12.83



# D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 a 4

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel		diminution difference
	Gauge pressure =	bar	Gauge pressure =	bar	mm	
PE 10 P..LS 846 + RQV..PA 677	1,0					13,1 - 13,2
			0			10,4 - 10,5
			0,46			12,5 - 12,6
			0,23			11,0 - 11,4

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 a 3

1. Edition

En

PE 10 P 110 A 520/5 LS 846 RQV 250-1150 PA 673  
Komb.-Nr. 0 401 849 180  
1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4  
0-27-72-99-144-171-216-243-288-315° ± 0,50° (± 0,75°)

supersedes  
company MAN  
engine D 2540 MT  
323 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <span style="float: right;">3,0-3,1 (2,95-3,15) mm (from BDC) 7y1 10</span>						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,9+0,1	14,0-14,2	0,4(0,8)			
250	6,9-7,1	1,1-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1170	15,2-17,8	-	-	-	ca. 12	100	min. 8,5	350	2,0-2,5
ca. 65	10,9 4,0 1450	1190-1200 1310-1340 0-1,0					250 400-460=2,0	6,9-7,1	850 1150	6,5-6,7 8,4

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,9 bar 140,0-142,0 (137,0-145,0)	1190-1200*	LDA 750	0,9 bar 134,0-138,0 (131,0-141,0)	100	145,0-175,0 (141,0-179,0)	-	-
			LDA 500	0 bar 115,0-118,0 (112,0-121,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

Testoil ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 a 3

- 2

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel mm (1)	diminution difference
		Gauge pressure = bar	Gauge pressure = bar		
PE 10 P..LS 846	0,90			11,9 - 12,0	
+ RQV..PA 673			0	11,1 - 11,2	
			0,38	11,7 - 11,8	
			0,33	11,3 - 11,5	

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 20,9 q 1

1. Edition

En

PE 12 P 110 A 520/4 LS 848 RQV 250-1200 PA 668-4  
Komb.-Nr. 0 401 840 094

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12  
0-15-60-75-120-135-180-195-240-255-300-315°  $\pm 0,5^\circ (\pm 0,75^\circ)$

supersedes-

company MAN  
engine D 2842 ME  
338 kW  
Schiff

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 3,0-3,1 \\ (2,95-3,15) \end{matrix}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,9+0,1	12,5-12,7	0,4(0,8)			
250	7,0-7,2	0,9-1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1330	15,2-17,8	-	-	-	ca. 12	100 250	min. 8,6 7,0-7,2	350 950 1200	1,9-2,3 5,6-5,8 7,4
ca. 61	10,9 4,0 1500	1240-1250 1365-1395 0-1,0				425-550 (3a)				

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) rev/min (4a)	Fuel delivery characteristics (5a) high idle speed (5b) rev/min cm <sup>3</sup> /1000 strokes		Starting fuel delivery idle switching point (6) rev/min cm <sup>3</sup> /1000 strokes	Torque-control travel (5) rev/min Control rod travel mm		
1 rev/min	2 cm <sup>3</sup> /1000 strokes	3 rev/min	4 rev/min	5 cm <sup>3</sup> /1000 strokes	6 rev/min	7 cm <sup>3</sup> /1000 strokes	8 rev/min	9 Control rod travel mm
1200	125,0-127,0 (122,0-130,0)	1240-1250*	-	-	100 250	150,0-170,0 (146,0-174,0) 9,0-15,0 (6,5-17,5)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

②

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 17,4 b 6

1. Edition

En

PE 10 P 110 A 520/5 LS 850 RQ 900 PA 663-2  
Komb.-Nr. 0 401 849 173

supersedes -  
company MAN  
engine D 2540 MTE  
274 kW

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4  
0-27-72-99-144-171-216-243-288-315°  $\pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zyl. 10; RW=9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
850	13,1+0,1	15,3-15,6	0,4(0,75)			
250	6,9-7,1	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	12,1 7,2 1000	900-905 932-946 0-1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

900-905 min<sup>-1</sup>

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
1	2	3	4	5	6	7	
850	153,0-156,0 (150,5-158,5)	-	-	-	-	-	-

Checking values in brackets

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 b 4

1. Edition

En

PE 10 P 110 A 520/4 LS 850 RQV 250-1150 PA 668-5  
Komb.-Nr. 0 401 849 176

supersedes

company MAN

engine D 2540 MTE  
323 kW

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4  
0-27-72-99-144-171-216-243-288-315°  $\pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0-3,1$  mm (from BDC)  
(2,95-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,9+0,1	14,1-14,3	0,4(0,8)			
250	6,9-7,1	1,1-1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1160	15,2-17,8	-	-	-	ca. 12	100 250 405-465=2,0	min. 8,5 7,2-7,4	350 900 1150	2,0-2,5 6,8-6,9 8,4
ca. 65	10,9 4,0 1450	1190-1200 1310-1340 0-1,0				3a				

Torque control travel a = - mm

## C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational-speed limitation intermediate speed rev/min 3	Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel rev/min 8	
cm <sup>3</sup> /1000 strokes 2	cm <sup>3</sup> /1000 strokes 5	cm <sup>3</sup> /1000 strokes 7	cm <sup>3</sup> /1000 strokes 9	cm <sup>3</sup> /1000 strokes 11	cm <sup>3</sup> /1000 strokes 13	cm <sup>3</sup> /1000 strokes 15	Control rod travel mm 16	Control rod travel mm 17
1150	141,0-143,0 (138,0-146,0)	1190-1200*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 b 5

1. Edition

En

PE 10 P 120 A 520/S LS 850 RQV 250-1150 PA 668-6

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° ± 0.5° (± 0,75°)

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tuping 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company MAN

engine D 2540 MLE 405 kW

Komb.-Nr. 0401849177

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,2+0,1	18,5-18,8	0,5 (0,9)			
250	6,2-6,4	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1230	15,2-17,8	-	-	-	ca. 11	100	min. 7,8	350	2,0-2,5
							250	6,2-6,4	750	5,2-5,6
							380-440 = 2,0		1150	7,5-7,9
ca. 59	10,2 4,0 1400	1190-1200 1260-1290 0 - 1,0							1250	8,8

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	1,0 bar 185,0-188,0 (182,0-191,0)	1190-1200 *	LDA 500	0 bar 119,0-122,0 (116,0-125,0)	100	205,0-225,0 (201,0-229,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
12.83

# D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 b 5 - 2 -

Test at n 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	bar Gauge pressure =	bar mm	(1)
PE10P.. LS 850	1,0	0	11,2-11,3	
+RQV.. PA 668-6		0,65	9,6-9,7	
		0,54	10,8-10,9	
			10,0-10,3	

## Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 17,4 b 7

1. Edition

En

PE 10 P 110 A 520/5 LS 850 RQV 250-1150 PA 670-1  
Komb.-Nr. 0 401 849 178

supersedes\_

company MAN

engine D 2540 MTE  
323 kW

1- 8- 7- 6- 3 - 5 - 2 -10 - 9 - 4  
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0-3,1$   
(2 95-3,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1150	11,9+0,1	14,0 - 14,3	0,4 (0,75)			
250	7,0-7,2	1,1 - 1,6	0,45 (0,75)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1170	15,2-17,8	-	-	-	ca. 12	100	min.8,6	350	2,0-2,5
ca. 65	10,9 4,0 1450	1190-1200 1310-1340 0 - 1,0					250 400-460 = 2,0	7,0-7,2	900 1150	6,8-6,9 8,4

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 140,0-143,0 (137,5-145,5)	1190-1200 *	LDA 500	0 bar 115,0-117,0 (112,5-119,5)	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

**BOSCH**

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D19

D19

# D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 b 7 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel	Elimination difference
	Gauge pressure =	bar Gauge pressure =	bar mm	(1)
PE 10 P.. LS 850 + RQV.. PA 670-1	0,7	0 0,38 0,34	11,9-12,0 11,0-11,1 11,6-11,7 11,2-11,4	

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 13,4 e

1. Edition

En

PES 6 P 110 A 420 LS 3037 EP/RSV 350-1050 P2/425 DR  
Values only apply to test nozzle-and-holder assembly  
1 688 901 016 and fuel-injection test tubing 9 681 271 027

Supersedes  
company IHC  
DTI-817 C  
Komb.-Nr. 0 402 076 710

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Suction-gallery pressure 2,8 bar

Port closing at prestroke 2,0 - 2,1  
(1,95-2,15) mm from BDC.

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pretensioning torque-control valve mm
1	2	3	4	2	3	6
1050	11,3±0,1	19,9-20,1	0,4			
350	4,6-4,7	2,0-2,5				

\*\* With control lever in end position: increase speed until 4 mm control-rod travel is reached. Then adjust idle spring so that it masks contact and screw out by one turn.

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
2	3		4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca. 21		**	1050	11,3-11,4
ca.45							100	20,0-21,0	700	12,1-12,3
							200	11,0-21,0	550	12,1-12,3
							350	4,6		
2a	1300	0,3 - 1,7					390-420=2,0			

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop	6 Rotational speed limit	3a Fuel delivery characteristics	Starting fuel delivery idle	5	4a Idle stop
Test temp. 40 °C (104 °F)	Note changed to rev/min	rev/min cm <sup>3</sup> /100 strokes	rev/min cm <sup>3</sup> /100 strokes	rev/min cm <sup>3</sup> /100 strokes	rev/min Control rod travel mm
1	3	4 5	6 7	8	9
LDA 1050	1090-1100*	LDA 750 0,8 bar 202,0-208,0 (199,0-211,0)	100 180,0-205,0	-	-
		LDA 800 0 bar 145,0-153,0 (142,0-156,0)	350 20,0-25,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

5.83

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# D. Adjustment Test for Manifold Pressure Compensator

IHC 13,4 e

- 2 -

Test at n = 800 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	bar Gauge pressure =	bar mm	(1)
PES6P..LS3037	0,19 - 0,25	Suction control-rod travel + 0,5 mm		
EP/RSV..P2/425DR		0,49 - 0,52	10,8 - 10,9	

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f1  
2. Edition

En

PE 6 P 120 A 320 RS 3071

RQV 250-1025 PA 371

supersedes 2.81  
company Volvo  
engine TD 120 GA

Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke <span style="float: right;">2,6-2,7 (2,55-2,75)</span> mm (from BDC)						
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	11,4+0,1	20,5-20,3	0,5(0,9)			
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca.12	100	min.7,1	250	1,1-1,2
ca.40	10,4	1065-1075					250	5,6-5,7	500	2,9-3,3
	4,0	1145-1175							800	5,1-5,4
	1300	0 - 1,0							1025	7,2

Torque control travel a =   mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0)	1065-1075*	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 =RW 20,0-21,0 mm	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel	diminution difference
		Gauge pressure - bar	Gauge pressure - bar	mm	
PE 6 P..RS 3071 +ROV.. PA 371	0,57			11,0-11,1	
			0,90	11,4-11,5	
			0	9,0-9,1	
			0,33	9,9-10,1	

### Notes

(1) when n =

rev/min and  
gauge pressure =

bar is maximum full-load control rod travel

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 o3

2. Edition

En

PE 6 P 110 A 320 RS 3080-1 RQV 250-1025 PA 589

Komb.-Nr. 0 401 846 768

supersedes 12.82

company Volvo

engine TD 100 FA

220 kW (299 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0 - 3,1$  mm (from BDC) = RW  $9,0 - 12,0$  mm  
(2,45-3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,2±0,1	17,9 - 18,1	0,4(0,8)			2,5 ± 0,1 (2,2 - 2,9)
250	4,3-4,5	1,7 - 2,1	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 9	100	min. 5,8	200	0,7-0,9
ca. 64	12,2	1085-1095					250	4,3-4,5	475	3,9-4,5
	4,0	1160-1190							660	
	1300	0 - 1,0					315-375 = 2,0		dis	6,4-6,6
						③a			945	
									1025	7,6

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)  (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)  Control rod travel mm	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
LDA 700	0,75 bar 179,0-181,0 (176,0-184,0)	1085-1095*	LDA 1000  LDA 700	0,75 bar 170,0-174,0 (167,0-177,0) 0 bar 130,5-133,5 (128,0-136,0)	100	150,0-200,0 (146,0-204,0) = 20,0-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

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E1

# D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 o3

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel- diminution difference (1)
	Gauge pressure = bar	Gauge pressure = bar	mm	
PE6P .. RS 3080-1 + RQV .. PA 589	0,42			12,5 - 12,6
		0,75		13,2 - 13,3
		0		10,5 - 10,6
		0,26		11,4 - 11,6

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 10,0 o2

3. Edition

En

PE 6 P 110 A 320 RS 3080-1 RQV 250-1100 PA 589

Komb.-Nr. 0 401 846 769

supersedes 8.83

company: Volvo

engine TD 100 F

220 kW (299 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,0 - 3,1$  mm (from BDC) = RW  $9,0 - 12,0$  mm  
(2,95 - 3,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,7+0,1	17,9 - 18,1	0,4(0,8)			2,5 ± 0,1
250	3,8-4,0	1,7 - 2,1	0,3(0,6)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1180	15,2-17,8	-	-	-	ca. 8	100	min. 5,3	200	0,7-0,9
ca. 63	11,7	1160-1170					250	3,8-4,0	500	4,2-4,8
	4,0	1235-1265					305-365	= 2,0	600	6,4-6,6
	1350	0 - 1,0				3a			1040	
									1100	7,6

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,75 bar	1160-1170*	LDA	0,75 bar	100	150,0-200,0	-	-
700	179,0-181,0 (176,0-184,0)		1000	170,0-174,0 (167,0-177,0)		= 20,0-21,0 mm RW		
			LDA	0 bar				
			700	130,5-133,5 (127,5-136,5)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 o 2 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement	Control rod travel	elimination difference
	Gauge pressure = bar	Gauge pressure = bar	mm	(1)
PE6P .. RS 3080-1 + RQV .. PA 589	0,42			12,0 - 12,1
		0,75		12,7 - 12,8
		0		9,9 - 10,0
		0,26		10,8 - 11,0

Notes.

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 14,6 a

4. Edition  
En
**Testoil-ISO 4113**

PE 8 P 110 A320 LS 3802

RQ 300/1150 PA 437 (1)  
RQV 300-1150 PA 486 (2)superseded by 80  
company Daimler-Benz  
OM 422  
engine 206 Kw (280 Ps)Komb.-Nr. 0 401 848 708 (1)  
0 401 848 712 (2)1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ \pm 0,5^{\circ}}$  ( $\pm 0,75^{\circ}$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

(3,95-4,15)  
Port closing at prestroke 4,00-4,10

mm (from BDC)

Zyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,7-12,8	12,1 - 12,3	0,4(0,8)			
300	8,5-8,7	1,1 - 1,7	0,4(0,7)			
600	-	C, Sp.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

RQ - 437

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,8-14,6	600	14,0	11,7	1195-1210	300	8,6	100	min. 10,1	1150	12,7-12,8
				4,0	1250-1280			300	8,5-8,7	1025	12,8-13,0
1400	0 - 1,0							420-470	=2,0	600	13,0-13,1

Torque-control travel  
on flyweight assembly dimension a = 0,2 mmSpeed regulation: At 1195-1210 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
1150	121,0 - 123,0 (118,0 - 126,0)	600		600	117,0 - 121,0 (114,0 - 124,0)	100	130,0-150,0

Checking values in brackets

347,496

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev./min Control rod travel mm	Control rod travel mm rev./min	(1a) Degree of deflection of control lever	rev./min	Control rod travel mm	Degree of deflection of control lever	rev./min	Control rod travel mm	(3) rev./min	(1) mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1150 1400	15,2-17,8 0 - 1				ca. 21	100 300	min. 10,1 8,5-8,7	300 450	1,7 3,0-3,3
ca. 66	11,7 4,0	1190-1200 1245-1275					735	795=2,0	1200	8,4

Torque control travel a = mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point	Torque-control travel	Control rod travel mm
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min
1	2	3	4	5	6	7	8
1150	121,0-123,0 (118,0-126,0)	1190-1200*	600	117,0-121,0 (114,0-124,0)	100	130,0-150,0	1150 900 600
					100-220 (80-240)		12,7-12,8 12,7-12,9 12,8-13,0

### Checking values in brackets

\* 1 mm less control rod travel than col 2

## B. Governor Settings

[illegible]

Torque control travel a =                      mm

### C. Settings for Fuel Injection Pump with Fitted Governor

[illegible]

### Checking values in brackets

\* 1 mm less control rod travel than col 2

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b 1  
2. Edition

En

PE 12 P 120 A 320 LS 3819-2 RNV 350-1050 PA 493

1-5 -9 - 8 - 3 - 4 -11-10 - 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 2,83  
Daimler-Benz  
comp. 424 A  
engine 357 kW (485 PS)

Komb.-Nr.  
0 401 840 711

## A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BUC)		Zv1. 12		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1050	10,2+0,1	15,1-15,3	0,5(0,8)			
350	4,6-4,8	1,2- 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca. 10	100	min. 6,2	300	0,9-1,1
							350	4,6-4,8	550	3,4-3,6
ca. 56	9,2	1085-1095							800	4,7-4,9
	4,0	1165-1195							1050	6,8
	1350	0 - 1,0				360-500				
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle switching point		travel	
Test oil temp. 40°C (104°F)		intermediate speed		⑤b				Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9	
LDA	0,6 bar	1080-1090*	LDA	0,6 bar	100	140,0-160,0	-	-	
1050	151,0-153,0		1050	120,0-123,0		(136,0-164,0)			
	(148,0-156,0)		**	(117,0-126,0)					
			LDA	0 bar					
			500	128,0-130,0					
				(125,0-133,0)					

Checking values in brackets

Set at the reduced-delivery stop.

\* 1 mm less control rod travel than col 2

10.83

Testoil-ISO 4113

# D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b 1 - 2

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel- diminution difference (1)
		Gauge pressure =	bar	Gauge pressure =
PE 12 P..LS3819-2 +ROV..PA 493	0,28			9,9-10,0
			0,60	10,2-10,3
			0	9,5-9,6
			0,24	9,6-9,8

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a

2. Edition

En.

PE 6 ZW 140/400 RS 27/2, 53/2

PE 6 ZW 140/410/3 RS 28/2, 54/2 RQUV 300-750 ZW 31

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

VDT-W-400/305 Please note instructions on sheet 2

Replaces 2.83

Firm. MTU

Engine: MMB 820

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1 mm (from BDQyl. 6)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	491,0-501,0	15,0 (22,0)	487,0-505,0	
600	4,0	70,0-90,0	10,0 (15,0)	67,0-93,0	
250	4,0	23,0-43,0	8,0 (12,0)	20,0-46,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	mm min <sup>-1</sup> 11
ca. 85	750 775 800 840 865	21,5-23,5 13,0-18,0 5,0-12,0 0-3,0 0	-	-	-	ca. 19	270 300 325 350 400 540	11,0-13,0 7,6-8,0 5,0-6,2 4,8 3,3-4,3 0	-	-

Torque control travel a = - mm Speed regulation: At 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 <sup>o</sup> )		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
750	21 mm RW	-	-	-	-	-

Checking values in brackets

11.83

Testoil-ISO 4113

Pump

With these pumps the customer also requests that the stop and full load limits of the control-rod projection be stamped on the pump housing at control-rod travel 0 mm. These dimensions, which must be stamped in, can be calculated as follows:

Mark control-rod travel 18 mm (setting point of the pump) with insertion device. Calculate the projection of the control rod front end on pump side 2. Deduct 18 mm from the dimension calculated. Calculate the projection of the control rod with forked piece fitted on pump side 1. Add 18 mm to this dimension. Stamp these dimensions on the front of the pump housing above the spring chamber cover (with plunger-and-barrel assembly 1 the dimension of pump side 1 and with plunger-and-barrel assembly 6 that of pump side 2). Size of figures approx. 5 - 6 mm.

After the insertion device has been removed the 0-dimension calculated on pump side 2 must be reached or not reached in the stop position of the control rod.

On pumps with governor ascertain only the dimension on the drive end and stamp this on the housing.

Governor

The lower idle spring must be positioned between its spring seats, and if necessary also the middle spring must be positioned under the outer spring seat, so that the governor specifications are reached.



# Test specifications

## Fuel injection pumps

### and governors

WPP 001/4 MTU 19,9 a 1

En.

1. Edition

PE 6 ZW 150/120 RS 70/11 RQU 250-350/1100 ZWA 46 DR

Komb.-Nr. 0 402 436 033

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-400/305

Replaces

Firm

MTU

Engine

MB 6 V 331

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke $\frac{2,50-2,60}{(2,45-2,65)}$ mm (from BDG) $\frac{2,50-2,60}{(2,45-2,65)}$ 6					
Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0 (24,0)	120,0-156,0	
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1100 350		C Sp. 2 C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	mm min 5	Control-rod travel mm min 6	Control lever deflection degrees 7	mm min 8	Control-rod travel mm min 9	mm min 10	Control-rod travel mm min 11
ca. 58	650 1100 1150 1200 1280	18,0 17,5-18,0 11,7-16,0 3,0-10,0 0-1,0	ca. 27	150 220 350 500 650 1000 1160	14,1-16,4 10,2-11,8 7,4-7,6 2,0-2,7 2,0 1,8-2,0 0	ca. 21	150 220 250 400 520	11,1-13,2 8,0-8,7 7,6-7,8 2,7-4,5 0	-	-

Torque control travel a = - mm Speed regulation. At 1130-1140 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1100	279,0-285,0 (276,0-288,0)	-		350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)
							Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

Test oil ISO 4113

# Test specifications

## Fuel injection pumps and governors

APP 001/4 MiU 19,9 a

En.

3. Edition

PE 6 ZW 150/120 RS 70/11 Z RQU 250-350/1100 ZWA 43 DR  
Komb.-Nr. 0 402 436 032

Replaces  
Firm 4.72  
Engine MiU  
MB 6 V 331

1- 2- 3 - 4 - 5 - 6  
0-45-120-165-240-285°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke		2,50-2,60 (2,45-2,65) mm (from BD <sub>2</sub> )		1. 6	
Rotational speed	Control-rod travel	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	in fuel delivery	Checking values	
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1100		C Sp. 2			
350		C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	mm	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 58	650	18,0	ca. 27	150	14,1-16,1	ca. 21	150	1,0-14,2	-	-
	1100	17,5-18,0		200	10,4-12,5		220	8,0-8,6		
	1150	11,7-16,0		350	7,4-7,6		250	7,6-7,8		
	1200	3,0-10,0		500	2,0-2,7		400	2,6-4,3		
	1280	0-1,0		650	2,0		520	0		
				1000	1,8-2,0					
				1160	0					

Torque control travel a = - mm Speed regulation At 1130-1140 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	
1100	318,0-324,0 (315,0-327,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)	
						Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 26,5 g

1. Edition

En.

PE 8 ZW 150/120 RS 74/11 RQU 250-350/1100 ZWA 46 DR

Komb. Nr. 0 402 438 011

Replaces

Firm MTU

Engine MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ}$  ( $\pm 0,75^{\circ}$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 8

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	
600	9,0	125,0-145,0	16,0(24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0(15,0)	33,0-61,0	
1100		C Sp 2			
350		C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 58	650	18,0	ca. 27	150	4,1-16,4	ca. 2	150	11,1-13,2	-	-
	1100	17,5-18,0		220	10,2-11,8		220	8,0-8,7		
	1150	11,7-16,0		350	7,4-7,6		250	7,6-7,8		
	1200	3,0-10,0		500	2,0-2,7		400	2,7-4,5		
	1280	0 - 1,0		650	2,0		520	0		
				1000	1,8-2,0					

Torque control travel a =  mm Speed regulation: At 1130-1140 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 <sup>o</sup> )		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1100	279,0-285,0 (276,0-288,0)	-		350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)
							Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps

### and governors

40

WPP 001/4 MTU 26,5 g 1

1. Edition

En.

PE 8 ZW 150/120 RS 74/11 Z RQU 250-350/1100 ZWA 43DR  
Komb.-Nr. 0 402 438 010

Replaces

Firm

Engine MTU  
MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke		mm (from BDP) 1. 8		mm (from BDP) 2. 8	
Rotational speed	Control-rod travel	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	in fuel delivery	Checking values	
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1100		C Sp. 2			
350		C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	min	Control-rod travel	Control lever deflection degrees	min	Control-rod travel	min	Control-rod travel
1	2	mm min	4	5	mm	7	8	mm	10	mm
ca. 58	650	18,0	ca. 27	150	14,1-16,4	ca. 21	150	11,0-14,2	-	-
	1100	17,5-18,0		200	10,4-12,5		220	8,0-8,6		
	1150	11,7-16,0		350	7,4-7,6		250	7,6-7,8		
	1200	3,0-10,0		500	2,0-2,7		400	2,6-4,3		
	1280	0-1,0		650	2,0		520	0		
				1000	1,8-2,0					
				1160	0					

Torque control travel a =  mm Speed regulation: At  130-1140 min<sup>-1</sup> 1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	
1100	318,0-324,0 (315,0-327,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)	
							Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

BOSCH

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E14

F-14

# Test specifications

## Fuel injection pumps and governors

En.

40

WPP 001/4 MTU 19,9 c

1. Edition

PE 6 ZW 150/120 RS 75/11 ROUV 375-1200 ZWA 45 R

Komb.-Nr. 0 402 436 035

Replaces

Firm. MTU

Engine MB 6 V 331

1 - 2 - 3 - 4 - 5 - 6  
 0 - 45-120-165-240-285<sup>0</sup> ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

2,50-2,60 (2,45-2,65) mm (from BDC) Zyl. 6

Port closing at prestroke

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1200		C Sp 2			
375		C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min <sup>-1</sup> 8	Control-rod travel mm 9	min <sup>-1</sup> 10	Control-rod travel mm 11
ca. 85	1200	17,7-21,4	-	-	-	ca. 32	240	18,0-20,0	-	-
	1250	11,5-16,8					340	8,6-9,7		
	1300	3,5-11,5					375	7,9-8,1		
	1350	0 - 5,6					460	3,5-5,6		
	1400	0 - 2,0					600	1,6-4,3		
							820	0		

Torque control travel a =  mmSpeed regulation. At 1230-1240 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1200	279,0-285,0 (276,0-288,0)	-	375	42,0-48,0	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps

### and governors

En.

WPP 001/4 MTU 26,5 h

1. Edition

Replaces

Firm MTU

Engine MB 8 V 331

PE 8 ZW 150/120 RS 76/11 RQUV 300-775 ZW (A) 47 R

Komb.-Nr. 0 402 438 007

1- 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) from BDC Zyl. 8

Rotational speed min <sup>-1</sup>	Control-rod travel mm	Fuel delivery Average value cm <sup>3</sup> /1000 strokes	Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes	Spring pre-tension (torque-control valve)
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
775		C Sp 2			
300		C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel mm	Control lever deflection degrees	min <sup>-1</sup>	Control-rod travel mm	Control lever deflection degrees	min	Control-rod travel mm	min	Control-rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 82	800	18,0-21,5	-	-	-	ca. 15	280	8,4-10,3	-	-
	900	0					320	6,1-9,3		
ca. 73	775	11,6-14,8					400	0,9-4,0		
	800	5,1-11,1					540	0		
	820	0 - 8,0								
	875	0								

Torque control travel a = mm Speed regulation At 780-790 min<sup>-1</sup> 1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
775	279,0-285,0 (276,0-288,0)	-	300	50,0-55,0	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps

### and governors

WPP 001/4 MTU 26,5 h1

1. Edition

En.

PE 8 ZW 150/120 RS 76/11 RQUV 375-1200 ZWA 45 R

Komb.-Nr. 0 402 438 003

Replaces

Firm

Engine

MTU

UB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60 (2,45-2,65) (from BDC) Zyl. 8

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0 (24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
200		C Sp 2			
375		C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 85	1200 1250 1300 1350 1400	17,7-21,4 11,5-16,8 3,5-11,5 0 - 5,6 0 - 2,0	-	-	-	ca. 32	240 340 375 460 600 820	18,0-20,0 8,6- 9,7 7,9- 8,1 3,5- 5,6 1,6- 4,3 0	-	-

Torque control travel a =   mm Speed regulation At 1230-1240 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 <sup>°</sup> )		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1200	279,0-285,0 (276,0-288,0)	-	375	42,0-48,0	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 b

5. Edition

En.

PE 6 ZW 150/120 RS 1001/11 RQUV 300-1200 ZWA 48 R

Replaces 1.78

Firm MTU

Engine MB 6 V 331

1 - 2 - 3 - 4 - 5 - 6  
0 - 45-120-165-240-285° ± 0,5° (±0,75°)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDZyl. 6)

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	mm min 5	Control-rod travel mm 6	Control lever deflection degrees 7	mm min 8	Control-rod travel mm 9	mm 10	Control-rod travel mm 11
ca. 85	1200	8,0-21,0	ca. 30	250	12,2-14,6	ca. 23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0 -2,0		730	0					

Torque control travel a =  mm Speed regulation: At 1230-1240 min<sup>-1</sup> less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-deliver characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300	= 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83



# Test specifications Fuel injection pumps and governors

En.

WPP 001/4 MTU 26,5 c

1. Edition

PE 8 ZW150/120 RS 1002/11 RQUV 300-1200 ZWA 48 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Note VDT-W-400/305

Replaces

Firm

MTU

Engine

MB 8 V 331

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

A. Fuel-injection pump settings

Port closing at prestroke		2,50-2,60 (2,45-2,65)		mm (from BDC) cyl. 8	
Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve) 6
1000	8,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min <sup>-1</sup> 8	Control-rod travel mm 9	min <sup>-1</sup> 10	Control-rod travel mm 11
ca. 85	1200	8,0-21,0	ca. 30	250	12,2-14,6	ca. 23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a =  mm Speed regulation At 1230-1240 min<sup>-1</sup> less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	Idle	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW		300 = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

BOSCH

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# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 19,9 d

1. Edition

En.

PE 6 ZW 150/120 RS 1007/11 RQU 250-350/1100 ZWA 43 DR

Replaces

Firm MTU

Engine MB 6 V 331

1 - 2 - 3 - 4 - 5 - 6  
 0 - 45-120-165-240-285<sup>0</sup>  $\pm 0,5^0$  ( $\pm 0,75^0$ )

Note VDT-W-400/305 Governor adjustment according to VDI-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDZyl. 6)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel min min <sup>-1</sup> 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min <sup>-1</sup> 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 58	650	18,0-18,5	ca. 27	100	14,5-17,5	ca. 21	150	9,5-11,8	-	-
	1100	17,5-18,0		350	7,6-8,2		250	7,7-8,2		
	1150	13,7-16,0		650	1,8-2,4		400	2,2-4,5		
	1200	3,0-10,0		1000	1,8-2,4		530	0		
	1230	0 - 1,0		1150	0					

Torque control travel a = - mm

Speed regulation: At 1130-1140 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1100	18 mm RW	Leerlauf 300 = 8,0 mm RW	-	-	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

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# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 c1

1. Edition

En.

PE 6 ZW 150/120 RS 1007/11 RQU 250-400/1100 ZWA 49 R

Replaces

Firm MTU

Engine MB 6 V 331

1 - 2 - 3 - 4 - 5 - 6  
 0 - 45-120-165-240-285<sup>0</sup> ± 0,5<sup>0</sup> (±0,75<sup>0</sup>)

Note VDT-W-400/305 Governor adjustment according to VDT-I-420/112  
 All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke		mm (from 80° cyl. 6)			
Rotational speed	Control-rod travel	Fuel delivery	Difference	Fuel delivery	Spring pre-tension
min <sup>-1</sup>	mm	Average value	in fuel delivery	Checking values	(torque-control valve)
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	min	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 58	700	18,0-18,5	ca. 22	150	15,0-18,0	ca. 13	150	9,8-11,9	-	-
	1125	17,6-18,0		400	7,8-8,8		250	7,8-8,2		
	1150	12,0-17,0		700	1,8-2,4		400	2,3-4,5		
	1200	0 - 7,5		1100	1,8-2,4		530	0		
	1300	0 - 1,0		1160	0					

Torque control travel a =   mm Speed regulation: At 1130-1140 min<sup>-1</sup> less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes	min <sup>-1</sup>	Leerlauf	min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes	min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes
1	2	3		4	5	6	7
1100	18 mm RW	300 = 8,0 mm RW		-	-	100	18,0-18,2 mm RW
							Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 e

1. Edition

En.

PE 12 ZW 150/120 RS 1008/11

RQUV 300-1200 ZWA 50 R

Replaces

Firm

MTU

Engine

MB 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  
0-45-60-105-120-165-180-225-240-285-300-345°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke $\frac{2,50-2,60}{(2,45-2,65)}$ mm (from BDC) Zyl. 12					
Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	cm <sup>3</sup> /1000 strokes	Checking values	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	mm	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
ca.85	1200	8,0-21,0	ca.30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,3-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a = " mm Speed regulation At 1230-1240 min<sup>-1</sup> less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
1200	18 mm RW	Idle 300 = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 39,7 e 1

1. Edition

En.

PE 12 ZW 150/120 RS 1008/11 RQUV 300-1200 ZWA 55 R

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  
0-45-60-105-120-165-180-225-240-285-300-345°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Replaces

Firm

MTU

Engine

MB 12 V 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from SDC)  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from SDC) 2yl. 12

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	mm min 5	Control-rod travel mm min 6	Control lever deflection degrees 7	mm min 8	Control-rod travel mm min 9	mm min 10	Control-rod travel mm min 11
ca. 85	200	8,0-21,0	ca. 30	250	12,2-14,6	ca. 23	150	4,3-16,1	-	-
	250	12,2-16,9		375	6,0-7,2		300	7,3-8,6		
	300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	350	0,4-6,4		600	0,8-2,1		570	0		
	420	0-2,0		730	0					

Torque control travel a =   mm Speed regulation: At 1230-1240 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300	= 8,0 mm RW	-		-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 26,5 e 1

1. Edition

En.

PE 8 ZW 150/120 RS 1009/11 RQU 250-400/1100 ZWA 49 R

Replaces

Firm

MTU

Engine

MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 45° ± 0,5° (+ 0,75°)

Note VDT-W 400/305!

Governor adjustment according to VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDC) Cyl. 8

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0- 90,0	10,0(15,0)	65,0- 95,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	mm min <sup>-1</sup> 11
ca. 58	700	18,0-18,5	ca. 22	150	15,0-18,0	ca. 13	150	9,8-11,9	-	-
	1125	17,6-18,0		400	7,8-8,8		250	7,8- 8,2		
	1150	12,0-17,0		700	1,8-2,4		400	2,3-4,5		
	1200	0- 7,5		1100	1,2-2,4		530	0		
	1300	0- 1,0		1160	0					

Torque control travel a =  mmSpeed regulation At 1130-1140 min<sup>-1</sup>  mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	Idle speed	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1100	18 mm RW	300	= 8,0 mm RW	-	-	100	18,0-18,2 mm RW
							shutoff solenoid 0,5-1,5 mm before stop

Checking values in brackets

11.83

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# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 26,5 e

1. Edition

En.

PE 8 ZW 150/120 RS 1009/11 RQUV 300-1200 ZWA 50 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

Note VDT-W-400/305

Replaces

Firm MTU

Engine MB 8 V 331

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke		2,50-2,60 (2,45-2,65)	mm (from BDC) Zyl. 8		
Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	mm min 5	Control-rod travel mm 6	Control lever deflection degrees 7	mm min 8	Control-rod travel mm 9	mm min 10	Control-rod travel mm 11
ca.85	1200	8,0-21,0	ca.30	250	2,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a =  mm Speed regulation At 1130-1140 min<sup>-1</sup>  mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300	= 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 39,7 b 1

2. Edition

En.

PE 12 ZW 150/120 RS 1010/11 RQUV 300-1200 ZWA 51 R  
 Komb.-Nr. 0 402 430 004  
 1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  
 0-45-60-105-120-165-180-225-240-285-300-345°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Replaces 5.83  
 Firm MTU  
 Engine: 12 V 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke		mm (from BD)		mm (from BD)	
2,5 - 2,6 (2,45-2,65)		2,5 - 2,6 (2,45-2,65)		2,5 - 2,6 (2,45-2,65)	
Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	cm <sup>3</sup> /1000 strokes	Checking values	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control-rod travel	
1	2	3	4	5	6	7	8	9	10	11
ca. 85	1200	18,0-21,0	ca. 30	375	6,0-7,2	ca. 23	300	7,3-8,6	-	-
	1250	12,2-16,8		250	12,2-14,6		150	14,3-16,1		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a =  mm Speed regulation: At 1230-1240 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	Idle	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3		4	5	6	7
1200	18 mm RW	300	= 8,0 mm RW	-	-	-	-

Checking values in brackets

11.83

Testoil-ISO 4113



# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 a

5. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQV 300-900 ZWA 51 R

Replaces 9.78

Firm. MTU

Engine MT 6 V 396

1 - 2 - 3 - 4 - 5 - 6

0 -45 -120-165-240-285°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Testoil-ISO 4113

## A. Fuel-injection-pump settings

 Port closing at prestroke  $\begin{matrix} 2,50-26,0 \\ (2,45-2,65) \end{matrix}$  mm (from BDC) Zyl. 6

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor settings

Sieve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 85	920 950 1020 1090	18,0-21,5 14,4-18,6 4,0-10,2 0-2,0	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0	ca. 23	100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a = mm

Speed regulation At 910-915 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristic		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	Idle 300 = 8 mm RW	-	-	-	-

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 23,8 b

1. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQUV 750 ZWA 53 R

1 - 2 - 3 - 4 - 5 - 6  
 0 -45 -120-165-240-285°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

Replaces

Firm

Engine MTU  
MT 6 V 396

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65) mm (from BDC) Zyl. 6

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770	9,6-11,8								
	790	1,4-5,2								
	810	0								

Torque control travel a = - mm

Speed regulation: At 760-765 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3	mm RW	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW		-	-	-	-

Checking values in brackets

11.83

Testoil ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 23,8 c

1. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQUV 900 ZWA 53 R

1 - 2 - 3 - 4 - 5 - 6

0 -45 -120-165-240-285 $\pm$  0,5 $^\circ$  ( $\pm$  0,75 $^\circ$ )

Note VDT-W-400/305

Replaces

Firm MTU

Engine MT 6 V 396

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Testoil ISO 4113

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDC) Zyl. 6

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	mm min 5	Control-rod travel mm min 6	Control lever deflection degrees 7	mm min 8	Control-rod travel mm min 9	mm min 10	Control-rod travel mm min 11
ca. 70	900	18,0	-	-	-	-	-	-	-	-
	920	11,1-12,0								
	940	1,4-5,6								
	965	0								

Torque control travel a = mm

Speed regulation: At 910-915 min<sup>-1</sup> mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 $^\circ$ )		Control rod stop at speed idle stop	Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	12 mm RW	-	-	-	-

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 23,8 f

1. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQU 750 ZWA 56 R

1 -2- 3- 4- 5- 6  
0-45-120-165-240-285°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Replaces

Firm: MTU

Engine MT 6 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $2,50-2,60$  mm (from BDC) Zyl. 6  
 $(2,45-2,65)$ 

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a = - mm Speed regulation: At 760-765 min<sup>-1</sup> mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3		min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW		12 mm RW	-	-	100 with	ca. 20 mm RW starting magnet

Checking values in brackets

11.83

Test oil ISO 4113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 d

1. Edition

En.

Replaces

Firm MTU

Engine MT 6 V 396

PE 6 ZW 160/120 RS 1012/11 RQU 900 ZWA 56 R

1 - 2 - 3 - 4 - 5 - 6  
0 -45 -120-165-240-285 $\pm$  0,5° ( $\pm$  0,75°)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDC) Zyl. 6

Testoil-ISO 4113

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor settings

Sleeve position 49,5 mm

B. Governor settings

stroke position 1950 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm min <sup>-1</sup>	Control-rod travel mm min <sup>-1</sup>	Control lever deflection degrees	min	Control-rod travel mm	Control lever deflection degrees	min	Control-rod travel mm	min	Control-rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 52	900	18,0	-	-	-	-	-	-	-	-
	860	26,8-32,4								
	880	22,3-26,3								
	900	17,0-19,0								
	930	3,7-10,0								
	960	0								

torque control and travel

Torque control travel a =   mm Speed regulation: At   1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	idle stop min 3	mm 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	12 mm RW		-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 23,8 e

1. Edition

En.

PE 6 ZW 160/120 RS 1012/11 RQU 750 ZWA 57 R

Replaces

Firm MTU

Engine MT 6 V 396

1- 2- 3- 4- 5- 6  
 0-45-120-165-240-285°  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Testoil ISO 4113

Port closing at prestroke		2,50-2,60 (2,45-2,65)	mm (from BDC)		Zyl. 6
Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	cm <sup>3</sup> /1000 strokes	Checking values	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	mm	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a =   mm Speed regulation At 760-765 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	idle stop	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
750	18 mm RW	12 mm RW	-	-	-	-

Checking values in brackets

11.83

# Test specifications Fuel injection pumps and governors

40

WPP 001/4 MTU 31,7 a

1. Edition

En.

PE 8 ZW 160/ 120 RS 1013/11 RQUV 300-900 ZWA 51 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^0 \pm 0,5^0 (\pm 0,75^0)$ 

Note VDT-W-400/305 !

Replaces

Firm MTU

Engine MT 8 V 396

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDZyl. 8)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	mm min <sup>-1</sup> 11
ca. 85	920 950 1020 1090	18,0-21,5 14,4-18,6 4,0-10,2 0 - 2,0	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0	ca. 23	100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a = mm

Speed regulation: At 910-915 min<sup>-1</sup> mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	Idle 300 = 8 mm RW	-	-	-	-

Checking values in brackets

11.83

F9  
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# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 31,7 b

1. Edition

En.

PE 8 ZW 160/ 120 RS 1013/11 RQUV 750 ZWA 53 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^0 \pm 0,5^0$  ( $\pm 0,75^0$ )

Replaces

Firm MTU

Engine MT 8 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $2,50-2,60$  mm (from BDZ) 1. 8  
(2,45-2,65)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm 2	Control-rod travel mm 3	Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770	9,6-11,8								
	790	1,4-5,2								
	810	0								

Torque control travel a = mm

Speed regulation: At 760-765 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3		min 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW		12 mm RW	-	-	-	-

Checking values in brackets

11.83

Testoil: 100 4113



# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 31,7 c

1. Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQUV 900 ZWA 53 R

Replaces

Firm MTU

Engine MT 8 V 396

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke $\begin{matrix} 2,50-2,60 \\ (2,45-2,65) \end{matrix}$ mm (from BDC) cyl. 8					
Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min <sup>-1</sup> 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 70	900	18,0	-	-	-	-	-	-	-	-
	920	11,1-12,0								
	940	1,4-5,6								
	965	0								

Torque control travel a = - mm Speed regulation: At 910-915 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW		12 mm RW	-	-	-	-

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 31,7 f

1<sub>6</sub> Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 56 R

Replaces

Firm MTU

Engine MT 8 V 396

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^0 \pm 0,5^0 (\pm 0,75^0)$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $2,50-2,60$  mm (from BDC) 8  
(2,45-2,65)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a = - mm

Speed regulation: At 760-765 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	idle stop min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW		-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

11-83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 31,7 d

1. Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQU 900 ZWA 56 R

Replaces

Firm MTU

Engine MT 8 V 396

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^0 \pm 0,5^0$  ( $\pm 0,75^0$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $2,50-2,60$  mm (from BDžyl. 8)  
( $2,45-2,65$ )

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 52	900	18,0	-	-	-	-	-	-	-	-
	860	26,8-32,4								
	880	22,3-26,3								
	900	17,0-19,0								
	930	3,7-10,0								
	960	0								

Torque control travel a =  mmSpeed regulation: At 910-915 min<sup>-1</sup> 1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3		min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW		12 mm RW	-	-	100	ca. 20 mm RW with starting magnet

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 31,7 e

1. Edition

En.

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 57 R

Replaces

Firm. MTU

Engine MT 8 V 396

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^0 \pm 0,5^0$  ( $\pm 0,75^0$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDC)  $\frac{2,50-2,60}{(2,45-2,65)}$  mm

Rotational speed	Control-rod travel	Fuel delivery	Difference	Fuel delivery	Spring pre-tension
min	mm	Average value	in fuel delivery	Checking values	(torque-control valve)
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	mm	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a =  mm Speed regulation. At 760-765 min<sup>-1</sup> mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	idle stop	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
750	18 mm RW	12 mm RW	-	-	-	-

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 47,5 d

1. Edition

En.

PE 12 ZW 160/120 RS 1015/11 RQUV 300-900 ZWA 51 R

Regulation

Firm MTU

Engine MT 12 / 396

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  
 0-45-60-105-120-165-180-225-240-285-300-345 $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke $\begin{matrix} 2,50-2,60 \\ (2,45-2,65) \end{matrix}$ mm (from BDžyl. 12)					
Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 85	920 950 1020 1090	18,0-21,5 14,4-18,6 4,0-10,2 0-2,0	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0	ca. 23	100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a =   mmSpeed regulation: At 910-915 min<sup>-1</sup> 1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 $^\circ$ )		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	Idle  300 = 8 mm RW	-	-	-	-

Checking values in brackets

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 47,5 e

En.

1. Edition

Replaces

Firm

MTU

Engine

MT 12 V 396

PE 12 ZW 160/120 RS 1015/11 RQUV 750 ZWA 53 R

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  
 0-45-60-105-120-165-180-225-240-285-300-345° $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305.

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

A. Fuel injection pump						
Port closing at prestroke		2,50-2,60 (2,45-2,65)		mm (from BDC)		7 y1 12
Rotational speed	Control-rod travel	Fuel delivery	Difference	Fuel delivery	Spring pre-tension	
min <sup>-1</sup>	mm	Average value	in fuel delivery	Checking values	(torque-control valve)	
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-	
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0		
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770 790 810	9,6-11,8 1,4- 5,2 0								

Torque control travel a = - mm

Speed regulation: At  $\approx 760-765$  min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	min <sup>-1</sup> 3		min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW		-	-	-	-

Checking values in brackets

11.83

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# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 47,5 c

2. Edition

En.

PE 12 ZW 160/120 RS 1015/11 RQU 750 ZWA 57 R

Replaces 5.83

Firm. MTU

Engine MT 12 V 396

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  
 0-45-60-105-120-165-180-225-240-285-300-345° $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Testoil-ISO 4113

 Port closing at prestroke  $\begin{matrix} 2,50-2,60 \\ (2,45-2,65) \end{matrix}$  mm (from BD) 1. 12

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Sleeve position 49,5 mm

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720	25,6-30,6								
	750	17,0-19,0								
	770	6,8-11,8								
	780	0,5-8,0								
	800	0								

Torque control travel a =   mm Speed regulation: At 760-765 min<sup>-1</sup> mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	idle stop min <sup>-1</sup> 3	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	-	-	-	-

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 d

1. Edition

En.

PE 8 ZW 150/120 RS 1019/11 RQUV 300-1200 ZWA 51 R

Replaces

Firm

Engine MTU  
MB 8 V 3311 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke  $2,50-2,60$  mm (from BDC) 2yl. 8  
(2,45-2,65)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in 

Testoil-ISO 4113

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca.85	1200	8,0-21,0	ca.30	250	12,2-14,6	ca.23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0-2,0		730	0					

Torque control travel a = - mm

Speed regulation: At 1230-1240 min<sup>-1</sup> less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	Idle 300 = 8,0 mm RW	-	-	-	-

Checking values in brackets

11.83



# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 b1  
1. Edition

En.

PE 6 ZW 150/120 RS 1021/11 RQUV 300-1200 ZWA 51 R

Replaces

Firm MTU

Engine: MB 6 V 331

1 - 2 - 3 - 4 - 5 - 6  
0 - 45-120-165-240-285<sup>0</sup>  $\pm 0,5^0$  ( $\pm 0,75^0$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,50-2,60}{(2,45-2,65)}$  mm (from BDZyl. 6)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 85	1200	8,0-21,0	ca. 30	250	12,2-14,6	ca. 23	150	14,3-16,1	-	-
	1250	12,2-16,8		375	6,0-7,2		300	7,3-8,6		
	1300	6,4-11,6		500	2,6-3,7		400	2,8-4,3		
	1350	0,4-6,4		600	0,8-2,1		570	0		
	1420	0 -2,0		730	0					

Torque control travel a =      mm

Speed regulation: At 1230-1240 min<sup>-1</sup> less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2	Idle	min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300 = 8,0 mm RW	-	-	-	-

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 b

2. Edition

En.

PE 8 ZW 160/120 RS 1027/11 RQUV 300-1200 ZWA 51 R  
Komb.-Nr. 0 402 438 024  
1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ} (+ 0,75^{\circ})$

Replaces 5.83

Firm MTU

Engine 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke  $2,5 - 2,6$  mm (from BZyl. 8)  
(2,45-2,65)

Rotational speed	Control-rod travel	Fuel delivery	Difference	Fuel delivery	Spring pre-tension
min	mm	Average value	in fuel delivery	Checking values	(torque-control valve)
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	min	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		590	0		
				720	0					

Torque control travel a = mm Speed regulation: At 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°C)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
		300 RW 8,0 mm				
Not known The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.						

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c

2. Edition

En.

PE 12 ZW 160/120 RS 1029/11 RQUV 300-1200 ZWA 51 R  
 Komb.-Nr. 0 402 430 009  
 1 - 12- 9 - 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

Replaces  
 Firm 5.83  
 MTU  
 Engine 331

0 - 45- 60-105-120-165-180-225-240-285-300-345<sup>0</sup>  $\pm 0,5^0$  ( $\pm 0,75^0$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $2,5 - 2,6$  mm (from BDC) Zyl. 12  
 (2,45-2,65)

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	22,0(33,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min 3	Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1205-1225		200	14,3-17,2		200	10,8-14,2		
	4,0	1320-1380		300	10,3-11,8		400	3,9-5,0		
	1400	0 - 2,0		500	2,5-3,7		590	0		
				720	0					

Torque control travel a =   mm

Speed regulation At

1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 °C)		Control rod stop at speed idle stop		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
		300 = RW 8,0 mm					
Not known The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.							

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 DAI 22,4 b

En.

6. Edition

PE 6 ZWM 140/120 RS RQU 425/1100 ZW 18 D  
RQU 425/1100 ZW 23 D

Replaces

Firm 2.66  
Engine Daimler-Benz  
MB 333 Ba

1- 2- 3 - 4 - 5 - 6  
0-45-120-165-240-285 · 0,5° (+ 0,75°) Note VDT-W 400/305!

All test specifications apply only to Bosch fuel-injection pump test benches and equipment!

### A. Fuel-injection-pump settings

Port closing at prestroke  $\frac{2,0-2,1}{(1,95-2,15)}$  mm (from ODC) Cyl. 6;

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18	373,0-378,0	11,0(16,0)	369,0-382,0	
600	9	143,0-163,0	14,0(21,0)	148,0-168,0	
200	9	71,0- 91,0	14,0(21,0)	66,0- 95,0	

Adjust the fuel delivery from each outlet according to the values in

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	mm min <sup>-1</sup> 5	Control-rod travel mm min <sup>-1</sup> 6	Control lever deflection degrees 7	mm min <sup>-1</sup> 8	Control-rod travel mm min <sup>-1</sup> 9	mm min <sup>-1</sup> 10	Control-rod travel mm min <sup>-1</sup> 11
ca. 60	550	23,5-24,0	Sliding-block position			ca. 22	600	2,8-3,2	500	21,8-22,4
ca. 58	1100	19,9-20,2					425	6,1-6,5	800	20,8-21,4
	1150	14,6-18,2					200	13,2-14,0	1000	20,2-20,5
	1200	9,0-14,3					350	9,4-11,0	1100	19,9-20,2
	1250	2,6-10,0					800	2,3- 2,8	1130	max. 1mm
	1350	0 - 1,0					1100	1,6- 2,0		less
							1180	0		

Torque control travel a = 0,4 mm +0,05 Speed regulation At 1130 min<sup>-1</sup> 1mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor Control lever (Test oil temperature 40°)		Control rod stop at speed min <sup>-1</sup> 3	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>-1</sup> 1	cm <sup>3</sup> /1000 strokes 2		min <sup>-1</sup> 4	cm <sup>3</sup> /1000 strokes 5	min <sup>-1</sup> 6	cm <sup>3</sup> /1000 strokes 7
1080	342,0-346,0	0,5-1,5 mm before stop	900	331,0-339,0	100	18,0-18,2 mm RW
			700	318,0-326,0		
			550	301,0-309,0		
					1220	RW max. 5 mm

Checking values in brackets

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by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50 Printed in the Federal Republic of Germany  
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Testoil-ISO 4113

# Test specifications

## Fuel injection pumps and governors

En.

WPP U01/4 MTU 29,9 c

9. Edition

PE 8 ZWM 140/120 RS 19/11 RQUV 300-1100 ZWA 40 R  
Komb.-Nr. 0 406 038 018

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Replaces

2.74

Firm

MTU

Engine

MB 837 Ba (660 PS)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke		mm (from BDZyl. 8)		mm (from BDZyl. 8)	
Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	cm <sup>3</sup> /1000 strokes	Checking values	
1	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	370,0-381,0	-
600	9,0	143,0-163,0	14,0 (21,0)	138,0-168,0	
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0	
1100		C Sp 2	9,0 (13,0)	C Sp 2	
300			8,0 (12,0)		

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	Control lever deflection degrees	mm	Control-rod travel	mm	Control-rod travel
1	2	3	4	5	6	7	8	9	10	11
max. 9	1100	15,0-18,2	-	-	-	26	300	6,8-7,5	-	-
	1150	10,4-14,8					120	12,0-14,0		
	1200	4,8-10,8					250	8,0-10,2		
	1250	0-6,8					400	2,8-4,3		
	1330	0					500	0,9-2,9		
							700	0		

Torque control travel a =   mm Speed regulation At 1130-1145 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 °C)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min	mm	min	cm <sup>3</sup> /1000 strokes	min	mm RW
1	2	3		4	5	6	7
1100	323,0-327,0 (320,0-330,0)	-		500	238,0-250,0 (235,0-253,0)	100	18,0-18,2 mm RW
				300	64,0-69,0	200	RW max. 5 mm

Checking values in brackets

11.83

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# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 22,4 c

4. Edition

En.

PE 6 ZWM 14C/120 RS 38/11 RQU 425/1100 ZWA 37 DR

Komb.-Nr. 0 406 036 026

1 - 2 - 3 - 4 - 5 - 6

0 -45 -120-165-240-285° ± 0,5° (± 0,75°)

Replaces 2.83

Firm MTU

Engine 833 Ea 500

Governor adjustment according to VDT-I-420/112 Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Rotational speed min	Control rod travel mm	Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)		Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes	Spring pre-tension (torque-control valve)
		1	2			
600	18,0			373,0-378,0	11,0 (16,0)	
600	9,0			143,0-163,0	14,0 (21,0)	
200	9,0			71,0-91,0	14,0 (21,0)	
1080				C. Sp. 2	9,0 (14,0)	
550				C. Sp. 5	11,0 (16,0)	
425					12,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control rod travel	Control lever deflection degrees	mm	Control rod travel	Control lever deflection degrees	mm	Control rod travel	mm	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
max.	600	18,0-18,5				ca. 27	600	1,4-1,8	-	-
ca. 58	1100	17,6-18,0	(Position of slider)				200	17,0-18,0		
	1150	13,6-16,2					350	10,0-14,0		
	1200	9,0-12,4					425	6,0-6,4		
	1250	3,6-8,5					500	2,6-4,2		
	1350	0 - 1,0					1100	1,4-1,8		
							1160	0		

Torque control travel a =  mm Speed regulation: At 1130 min<sup>-1</sup> 1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes		min	cm <sup>3</sup> /1000 strokes	min	mm RW
1	2	3	4	5	6	7
1080	352,0-356,0 (349,0-359,0)	-	550	277,0-295,0 (273,0-299,0)	100	18,0-18,2 mm RW
		Shutoff solenoid 0,5 - 1,5 mm in front of stop	425	Idle 57,0-63,0	High 1220	idle speed RW max. 5 mm

Checking values in brackets

11.83

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# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 29,9 d

2. Edition

En.

PE 8 ZWM 140/120 RS 1018/11 RQU 350-500/1050 ZWA 59 DR  
Komb.-Nr. 0 406 038 021

Governor adjustment according to VDT-I-420/112

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45 \pm 0,5$  ( $\pm 0,75$ )

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Replaces 2.83  
Firm MTU  
Engine MB 837 Ea  
537 kW (730 PS)

Testoil-ISO 4113

### A. Fuel-injection-pump settings

Rotational speed min <sup>-1</sup>	Control-rod travel mm	Fuel delivery		Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes	Spring pre-tension (torque-control valve)
		Average value cm <sup>3</sup> /1000 strokes	mm (from BDC) 2,0-2,1 (1,95-2,15)			
1	2	3	4	5		
600	18,0	373,0-378,0	11,0 (16,0)	369,0-382,0	-	
600	9,0	143,0-163,0	14,0 (21,0)	148,0-168,0		
200	9,0	71,0-91,0	14,0 (21,0)	66,0-96,0		
1050		C, Sp. 2	10,0 (15,0)			
300		C, Sp. 5	9,0			

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel mm	Control lever deflection degrees	mm	Control-rod travel mm	Control lever deflection degrees	mm	Control-rod travel mm	mm	Control-rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 62	700	18,0	ca. 43	500	6,6-9,1	ca. 27	300	7,1-8,3	-	-
	1070	17,6-18,0		400	12,0-17,0		100	15,3-18,0		
	1150	9,6-14,0		570	0-4,0		200	12,0-15,7		
	1230	0,4-7,0		660	0		400	1,5-5,2		
	1300	0					520	0		

Torque control travel a = - mm

Speed regulation: At 1075-1085 min<sup>-1</sup> less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Leerlauf		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes		min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
1050	358,0-362,0 (355,0-365,0)	-	300	80,0-90,0	100	18,0-18,2 mm RW
						Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 26,5 a

2. Edition

En.

PE8ZWM 160/120 RS 1032/11 RQUV300-1200 ZWA 51 R

1-2-6-3-4-5-7-8 je 45° + 0,5° (+ 0,75°)

Komb.-Nr. 0 406 038 022

Note VDT-W 400/305!

Replaces

Firm 2.83

Engine MTU

8 V 331

Hydrofoil

Testoil-ISO 4113

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke <sup>2,5-2,6</sup> (2,45-2,65) mm (from BDC) Cyl.8

Rotational speed min <sup>1</sup>	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0- 92,0	11,0(16,0)	67,0- 97,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>2</sup>	Control-rod travel mm min <sup>3</sup>	Control lever deflection degrees 4	mm min <sup>5</sup>	Control-rod travel mm 6	Control lever deflection degrees 7	mm min <sup>8</sup>	Control-rod travel mm 9	mm min <sup>10</sup>	Control-rod travel mm 11
ca.84	1200	18,0-19,0	ca.27	375	8,0	ca.21	300	8,0	-	-
ca.84	17,0 4,0 1400	1205-1225 1320-1380 0 - 2,0		200 300 500 720	14,3-17,2 10,3-11,8 2,5- 3,7 0		200 400 590	10,8-14,2 3,9- 5,0 0		

Torque control travel a =  mmSpeed regulation At 

1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min <sup>1</sup>	cm <sup>3</sup> /1000 strokes 2	min <sup>3</sup>	min <sup>4</sup>	cm <sup>3</sup> /1000 strokes 5	min <sup>6</sup>	cm <sup>3</sup> /1000 strokes 7
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.		300 = RW 3,0 mm				

Checking values in brackets

11.83

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# Test specifications

## Fuel injection pumps and governors

En.

WPP 001/4 MTU 29,9 f

1. Edition

PE 8 ZWM 150/120 RS 1035 RQU 300-500/1100 ZWA 59 DR  
 Komb.-Nr. 0 406 038 024  
 1-2-6-3-4-5-7-8 je  $45^\circ \pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

Governor adjustment according to VDT-I-420/112

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Replaces

Firm

MTU

Engine

UB 837 EA -  
Italien
**Testoil-ISO 4113**

### A. Fuel-injection-pump settings

2,5-2,6 (2,45-2,65)

Port closing at prestroke

mm (from BDC)

Rotational speed min 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	527,0-537,0	14,0 (21,0)	524,0-540,0	
1000	9,0	175,0-195,0	12,0 (18,0)	170,0-200,0	
300	9,0	104,0-124,0	16,0 (24,0)	99,0-129,0	
1100	12,3	Abschn. C	12,0 (18,0)		
800	13,2		16,0 (24,0)		
425	6,7		12,0		

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 65	800	18,0-18,5	ca. 39	500	7,0	ca. 33	425	6,6-6,9	1100	12,3
	1100	12,3					300	13,0-15,0	800	13,1+0,2
	11,3	1125-1140	ca. 19	300	7,0		400	7,8-9,0		
	5,0	1189-1215					500	1,0-3,3		
	0	1255-1275					535	0 - 0,5		

Torque control travel a = 0,2 mm ± 0,5

Speed regulation At

1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
1100	302,0-308,0 (300,0-310,0)	700 (Lasche)		800	331,0-351,0 (326,0-356,0)	425	53,0-59,0

Checking values in brackets

11.83

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 44,3 a

3. Edition

En.

PE 8 ZWM 160/120 RS 2001 RQUV 300-1050 ZWA 65 R  
 Komb.-Nr. 0 406 038 023  
 1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$   
 Note VDT-W-400/305

Replaces **5.83**  
 Firm: MTU  
 Engine: 396-03  
 960 kW

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

Port closing at prestroke  $2,5 - 2,6$  mm (from BD  $\bar{z}$ yl. 8)  
 (2,45-2,65)

Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622,0-636,0	20,0 (30,0)	619,0 - 639,0	-
1000	9,0	220,0-248,0	28,0 (42,0)	215,0 - 253,0	
300	9,0	104,0-128,0	16,0 (24,0)	99,0 - 133,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm min <sup>-1</sup> 2	Control-rod travel mm min <sup>-1</sup> 3	Control lever deflection degrees 4	min <sup>-1</sup> 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0-2,0		500	1,9-3,7		590	0		
				720	0					

Torque control travel a =   mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	idle stop min <sup>-1</sup> 3	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
		300 = RW 8,0 mm	-	-	-	-
Not known The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.						

Checking values in brackets

11.83

Testoil ISO 4113

# Test specifications

## Fuel injection pumps and governors

WPP 001/4 MTU 47,5 a

4. Edition

En.

PE 12 ZWM 160/120 RS 2002 RQUV 300-1050 ZWA 65 R

Replaces

Firm 4.83

MTU

Engine 12 V 396-03

1440 kW

1-2-9-4-5-8-11-2-3-10-7-6  
0-45-60-105-120-165-180-225-240-285-300-345 °  $\pm 0,5^\circ (\pm 0,75^\circ)$ 

Note VDT-W-400/305 !

Komb.-Nr. 0 406 030 002

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

### A. Fuel-injection-pump settings

A. Fuel injection pump					
Port closing at prestroke		2,5-2,6 (2,45-2,65)	mm (from 300) 1. 12		
Rotational speed min <sup>-1</sup> 1	Control-rod travel mm 2	Fuel delivery Average value cm <sup>3</sup> /1000 strokes 3	Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000	18,0	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000	9,0	220,0-248,0	28,0 (42,0)	215,0-253,0	
300	9,0	104,0-128,0	16,0 (24,0)	99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in 

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees 1	mm 2	Control-rod travel mm 3	Control lever deflection degrees 4	min 5	Control-rod travel mm 6	Control lever deflection degrees 7	min 8	Control-rod travel mm 9	min 10	Control-rod travel mm 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0 - 2,0		500	1,9-3,7		590	0		
				720	0					

Torque control travel a =  mm

Speed regulation At

1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 °C)		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery	
min 1	cm <sup>3</sup> /1000 strokes 2	idle stop min 3		min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
		300 = RW 8,0 mm					
Not known The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.							

Checking values in brackets

11.83

Testoil-ISO 4113

# Test specifications

## Fuel injection pumps

### and governors

WPP 001/4 MTU 23,7 a

2. Edition

En.

PE 6 ZWM 160/120 RS 2004 RQUV 300-1050 ZWA 65 R

Komb.-Nr. 0 406 036 034

1- 2- 3 - 4 - 5 - 6

0-45-120-165-240-325 °  $\pm 0,50$  ( $\pm 0,75$  °)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

Replaces

Firm 4.83

MTU

Engine 396-03

720 kW

Testoil-ISO 4113

### A. Fuel-injection-pump settings

Port closing at prestroke <sup>2,5-2,6</sup> (2,45-2,65) mm (from BDC)

Rotational speed	Control-rod travel	Fuel delivery	Difference in fuel delivery	Fuel delivery	Spring pre-tension (torque-control valve)
min	mm	Average value	in fuel delivery	Checking values	
1	2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
3			4	5	
1000	18,0	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000	9,0	220,0-248,0	28,0 (42,0)	215,0-253,0	
300	9,0	104,0-128,0	16,0 (24,0)	99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in  

### B. Governor settings

Upper rated speed			Medium rated speed			Lower rated speed			Torque control	
Control lever deflection degrees	mm	Control-rod travel mm	Control lever deflection degrees	min	Control-rod travel mm	Control lever deflection degrees	min	Control-rod travel mm	min	Control-rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0	1055-1075		200	14,3-17,2		200	10,8-14,2		
	4,0	1150-1210		300	10,3-11,8		400	3,9-5,0		
	1250	0 - 2,0		500	1,9-3,7		590	0		
				720	0					

Torque control travel a =   mm Speed regulation At   1 mm less control rod travel

### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40 °C)		Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	idle stop	min	cm <sup>3</sup> /1000 strokes	min	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7
		300 = RW 8,0 mm				
Not known The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.						

Checking values in brackets

11.83

⑥

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

46

WPP 001/4 BMW 2,4 a

1. Edition

En

VE 6/10 F 2400 R 121  
0 460 406 022  
DHK: 1 688 901 022 / 130 bar

Test pressure line  
6x2x450 mm / 1 680 750 073  
Overflow temperature 45° C

supersedes  
company BMW  
engine M 21 D 24-Europa

**Testoil-ISO 4113**

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

### 1. Settings

	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3-4,7	mm	1,050	
1.2 Supply pump pressure	1500	6,1-6,5	bar (kgf/cm <sup>2</sup> )	1,050	
1.3 Full-load delivery without charge-air pressure	500	28,0-29,0	cm <sup>3</sup> /1000 strokes	0	3,0
Full-load delivery with charge-air pressure	1500	40,8-41,8	cm <sup>3</sup> /1000 strokes	1,050	2,5
1.4 Idle speed regulation	400	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	3,0
1.5 Start	250	35,0-36,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2600	17,5-23,5	cm <sup>3</sup> /1000 strokes	1,050	
1.7 Load-dependent start of delivery	-				

### 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=1,050	n = rev/min mm	500 (*) 1,1-1,9	750 (0,8-2,2)	1000 (*)	1500 (3,8-5,2)	2300 7,4-8,2(7,1-8,5)
2.2 Supply pump LDA=1,050	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,2-3,6				2300 8,1-8,5
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)				2400 55-138(40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2700	7,0-13,0	( 6,0-14,0)	1,050	
	2600		(16,5-24,5)	1,050	K 3,2-3,4
	2400	40,6-42,6	(39,4-43,8)	1,050	KF 6,3-6,6
	1500		(39,1-43,5)	1,050	
	** 750	34,5-35,5	(32,0-38,0)	0,250	MS 1,5-1,7
	500		(25,5-31,5)	0	SVS 4,0
switch-off	2400	0			A B

### 3. Dimensions

Idle stop	400		( 4,0-12,0)
	475	max. 3,0	
End stop	100	26,5-36,5	
	400	31,5-41,5	
	480	25,2-29,8	

Observations  
\*Test hydr. cold-start accelerator:  
Please note instructions on sheet 2.

### 2.4 Solenoid

max. cut-in voltage xxx min. 10 V  
test voltage xxxxxxxx rated voltage 12V.

\*\*Correction at the  
adjusting nut (46).

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\* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator.

500 1/min 1.9 - 2.9 (1.7-3.1)

1000 1/min 3.7 - 4.7 (3.5-4.9)

\*\* Manifold-pressure compensator stroke = 4.3 mm

# Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 HAN 3,1 e 2

2. Edition

En

46

Testoil-ISO 4113

VA 6/100 H 1300 BR 54-3  
0 460 306 100

supersedes 6.82  
company Hanomag  
engine D 162 R-92 PS

Pre-stroke setting 0,3 mm  
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers  
Test Instructions and Test Equipment VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	3,0-4,0 mm		
1.2 Supply pump pressure	900	4,7-5,2 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge air pressure	1100	57,0-58,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start (mech.)	100	mind. 65,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1430	38,5-46,5 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	580-730 (550-760)	900	1000-1150
	mm	Beginn	(2,7-4,3)	4,7-5,4 (4,4-5,7)
2.2 Supply pump	rev/min	100	900	1300
	kp/cm <sup>2</sup>	1,1-1,6 (0,9-1,8)	(4,5-5,4)	5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min	500	1000	
	cm <sup>3</sup> /10 s	mind. 25	55-125 (40-140)	

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge air pressure kp/cm <sup>2</sup>
End stop	Full	1480-1530 (1460-1550)	0	
		1430	(37,5-47,5)	
		1300	58,0-61,0 (57,0-62,0)	
		1100	(56,5-58,5)	
		500	50,0-53,0 (49,0-54,0)	
	Stop	1300	0	
Idle stop	Full	450-570 (430-590)	0	
		300	(11,0-19,0)	
		100	mind. 65,0	
End stop	Start	mind. 150		

Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 6,0 mm (s.a.BMP 161/32) Dimension V = - mm



# Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 4,4 d 1 **46**

2. Edition

En

Testoil-ISO 4113

A 4/11 H 1250 CR 93-2  
D 460 314 045

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

6.82  
supersedes  
company IHC  
engine D 268/510

Pre-stroke setting 0,5 mm  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	6,1-6,7 mm		
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	80,5-81,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	400	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 95,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1330	34,0-42,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	500	1000	1250
	mm	0,5-1,5 (0,3-1,7)	(5,9-6,9)	7,0-7,7 (6,8-7,9)
2.2 Supply pump	rev/min	200	1000	1250
	kp/cm <sup>2</sup>	1,5-2,0 (1,3-2,2)	(5,3-6,2)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450	0	
		1330		(33,0-43,0)
		1200	84,5-87,5	(83,5-88,5)
		800		(80,0-82,0)
		500	78,0-82,0	(77,0-83,0)
	Stop	1250	0	
Idle stop	Full	470-520	0	
		400		(11,0-19,0)
End stop	Start	100	mind. 95,0	

1.84

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Angle to the stop-plate		Pre-setting dimensions	
Pump	$= 25 \pm 4^\circ$	Pump	
$\alpha$	$= 36 \pm 3^\circ$	Dimension IV =	- mm
$\beta$	$= 30 \pm 8^\circ$	Dimension V =	- mm
$\gamma$	$= 60 \pm 8^\circ$		
$\delta$			

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,6 c

4. Edition

En

Testoil-ISO 4113

VA 3/11 H 1200 CL 134-9  
0 460 313 019

supersedes 6.82  
company Fiat  
engine 8035-04265

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

0,7 mm  $\pm 0,02$  ( $\pm 0,04$ )  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,1-5,1 mm		
1.2 Supply pump pressure	800	4,8-5,3 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	68,0-69,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 120,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

	rev/min	Checking values in brackets	800	1050	1100-1230
2.1 Timing device	rev/min	Beginn 330-430	1,8-2,8 (1,6-3,0)	(3,9-5,3)	6,9-7,9 (6,7-7,1) 9,0-9,6 (8,8-9,3)
	mm				
2.2 Supply pump	rev/min	200	800	1200	
	kp/cm <sup>2</sup>	1,7-2,1 (1,5-2,3)	(4,6-5,5)	6,6-7,1 (6,4-7,3)	
Overflow delivery	rev/min	500		1200	
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410	0	
		1300	(35,0-45,0)	
		1250-1270	Beginn	
		1200	61,0-64,0 (60,0-65,0)	
		800	(67,5-69,5)	
		500	62,5-66,5 (61,5-67,5)	
	Stop	1200	0	
Idle stop	Full	340-400	0	
		300	(16,0-24,0)	
	Start	100	mind. 120,0	
End stop		110-230		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 45 \pm 3^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV = 3,80 mm Dimension V = 24,65 mm

# Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 FIA 3,5c

3. Edition

Testoil-ISO 4113

VA 4/110 H 1250 CL 136-8  
0 460 314 038

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0.5 mm  $\pm 0.02$  ( $\pm 0.04$ )  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

supersedes 6.82

company Fiat

engine 8045-02270  
66 PS

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers

Test Instructions and Test Equipment  
VDI-WPP 161/4 B

Pre-setting see reverse side

## 1. Settings

	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,3-6,3 mm		
1.2 Supply pump pressure	1000	5,3-5,8 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	22,0-28,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 110,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1400	26,0-34,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	700	1000	1250
	mm	2,4-3,2 (2,1-3,5)	(5,1-6,5)	6,0-6,7 (5,6-7,0)
2.2 Supply pump	rev/min	200	1000	1250
	kp/cm <sup>2</sup>	1,5-2,0 (1,3-1,8)	(5,1-6,0)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500	1250	
	cm <sup>3</sup> /10 s	55-100 (40-110)	55-100 (40-110)	

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1450-1500	0	
		1400	(25,0-35,0)	
		1250	65,5-68,5 (64,5-69,5)	
		800	(66,5-69,5)	
		500	59,0-62,0 (58,0-63,0)	
	Stop	1250	0	
Idle stop	Full	400-450	0	
		300	(21,0-29,0)	
		100	mind. 110,0	
End stop	Start	110-230		

1.84

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Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \begin{smallmatrix} + \\ - \end{smallmatrix} 4^\circ$	Dimension IV	$= 3,00 \text{ mm}$
$\beta$	$= 35 \begin{smallmatrix} + \\ - \end{smallmatrix} 8^\circ$	Dimension V	$= 24,65 \text{ mm}$
$\gamma$	$= 30 - 8^\circ$		
$\delta$	$= 60 + 8^\circ$		

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 5,5 n

1. Edition

En

Testo: ISO 4113

VA 6/11 H 1200 CR 185-4

0 460 316 042

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

supersedes  
company Fiat  
8065-02  
engine

Pre-stroke setting 0.5 mm  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT WPP 161 4 B  
Pre-setting see reverse side

## 1. Settings

	rev/min	Settings	Charge air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	900	5,9-6,7 mm		
1.2 Supply pump pressure	900	5,0-5,5 kp/cm <sup>2</sup>		
1.3 Full-load delivery without charge-air pressure	900	68,0-69,0 cm <sup>3</sup> /1000 strokes		3,0
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	min. 90,0 cm <sup>3</sup> /1000 strokes		
1.6 Full-load speed regulation	1300	22,0-30,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

		Checking values in brackets		
2.1 Timing device	rev/min	500	900	
	mm	1,5-2,3 (1,2-2,6)	(5,6-7,0)	
2.2 Supply pump	rev/min	200	900	1200
	kp/cm <sup>2</sup>	1,4-1,9 (1,2-2,1)	(4,8-5,7)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500		1200
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)

### 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge air pressure kp/cm <sup>2</sup>
End stop	Full	1330-1380	0	
		1300		(21,0-31,0)
		1180	60,5-63,5	(59,5-64,5)
		900		(67,5-69,5)
		500	53,0-56,0	(52,0-57,0)
	Stop			
Idle stop	Full	350		(11,0-19,0)
		440-490	0	
		100	min. 90,0	
End stop	Start	110-230		

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 54 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension $l \mp 1,0 \text{ mm}$ Dimension $w \mp 24,65 \text{ mm}$



# Test Specifications Distributor-Type Fuel Injection Pump

**46**

WPP 001/4 FIA 3,6 a

4. Edition

En

Testoil-ISO 4113

VA 4/110 H 1600 CR 190  
0 460 314 033

supersedes 6.82  
company Fiat  
engine 8040.04

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5  $\pm 0,02$  ( $\pm 0,04$ )  
Setting of the pointer at a stroke of 1 mm in  
relation to outlet "A".

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP 161/4 B  
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1000	4,6-5,4 mm		
1 2 Supply pump pressure	1000	5,2-5,7 kp/cm <sup>2</sup>		
1 3 Full-load delivery without charge-air pressure	700	67,0-68,0 cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	300	9,0-15,0 cm <sup>3</sup> /1000 strokes		3,0
1 5 Start	100	mind. 110,0 cm <sup>3</sup> /1000 strokes		
1 6 Full-load speed regulation	1750	41,0-49,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

Checking values in brackets

		700	1000	1400	1600
2 1 Timing device	rev/min				
	mm	1,5-2,5 (1,3-2,7)	(4,3-5,7)	8,0-9,0 (7,8-9,2)	8,9-9,6 (8,5-9,9)
2 2 Supply pump	rev/min	400	1000		1600
	kp/cm <sup>2</sup>	2,2-2,7 (2,0-2,9)	(5,0-5,9)		8,1-8,6 (7,9-8,8)
Overflow delivery	rev/min	500		1600	
	cm <sup>3</sup> /10 s	55-100 (40-110)		55-100 (40-110)	

### 2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1900-2000	0	
		1750	(40,0-50,0)	
		1600	59,5-62,5 (58,5-63,5)	
		1000	67,0-70,0 (66,0-71,0)	
		700	(66,5-68,5)	
		500	56,5-59,5 (55,5-60,5)	
	Stop	1600	0	
Idle stop	Full	330-380	0	
		300	(8,0-16,0)	
		100	mind. 110,0	
End stop		300-400		

1.84

Angle to the stop-plate		Pre-setting dimensions	
Pump		Pump	
$\alpha$	$= 25 \pm 4^\circ$	Dimension IV	5,2 mm
$\beta$	$= 50 \pm 8^\circ$	Dimension V	24,65 mm
$\gamma$	$= 30 \pm 8^\circ$		
$\delta$	$= 60 \pm 8^\circ$		

# Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 2,6 a

3. Edition

En

Testoil-ISO 4113

VA 3/10 H 1200 CR 411  
0 460 303 158

supersedes 10.81  
company Steyr  
engine WO 311.40

Nozzle-and-holder assembly  
1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0,5 mm  $\pm$  0,02 ( $\pm$  0,04)

All test specifications are valid for  
Bosch Fuel Injection Pump Test Benches  
and Testers  
Test Instructions and Test Equipment  
VDT-WPP '61-4 B  
Pre-setting see reverse side

## 1. Settings

	rev./min	Settings	Charge-air press kp/cm <sup>2</sup>	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	5,6-6,6 mm		
1.2 Supply pump pressure	1000	4,9-5,3 kp/cm <sup>2</sup>		
1.3 Full load delivery without charge-air pressure	1150	65,5-66,5 cm <sup>3</sup> /1000 strokes		2,5
Full load delivery with charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0 cm <sup>3</sup> /1000 strokes		3,0
1.5 Start	100	mind. 70,0 cm <sup>3</sup> /1000 strokes		
1.6 Full load speed regulation	1300	36,0-44,0 cm <sup>3</sup> /1000 strokes		

## 2. Test Specifications

	rev./min	Checking values in brackets	700	1000
2.1 Timing device	mm	Beginn	2,7-3,7 (2,4-4,0)	(5,4-6,8)
2.2 Supply pump	rev./min kp/cm <sup>2</sup>	200 1,2-1,6 (1,0-1,8)	1000 (4,7-5,5)	1200 5,6-6,0 (5,4-6,2)
Overflow delivery	rev./min cm <sup>3</sup> /10 s	500 55-100 (40-110)		1200 55-100 (40-110)

## 2.3 Fuel deliveries

Speed control lever	Delivery lever	rev./min	cm <sup>3</sup> /1000 strokes	Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1360-1410	0	
		1300	(35,0-45,0)	
		1150	(65,0-67,0)	
		1000	68,5-70,5 (67,5-71,5)	
		500	54,5-57,5 (53,5-58,5)	
	Stop	1200	0	
Idle stop	Full	380-430	0	
		300	(11,0-19,0)	
	Start	100	mind. 70,0	
End stop		170-250		

1.84

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G21

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Angle to the stop-plate		Pre-setting dimensions	
Pump	$= 25 \pm 4^\circ$	Pump	
1	$= 44 \pm 8^\circ$	Dimension IV	$= 2,70 \text{ mm}$
2	$= 30 - 8^\circ$	Dimension V	$= 24,65 \text{ mm}$
3	$= 60 + 8^\circ$		

# Test Specifications Distributor-type Fuel-injection Pumps

VE 6/12 F 1300 L 21-3

0 460 426 022

DHK: 1 688 901 020

Overflow temperature 45° C

supersedes  
company Perkins  
engine T 6.354.4

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

## 1. Settings

	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,8-4,2 mm	0,8	
1.2 Supply-pump pressure	800	4,4-5,0 bar (kgf/cm <sup>2</sup> )	0,8	
1.3 Full-load delivery with charge-air pressure	1000	99,5-100,5 cm <sup>3</sup> /1000 strokes	0,8	3,5
Full-load delivery without charge-air pressure	500	72,0-73,0 cm <sup>3</sup> /1000 strokes	0	
1.4 Idle regulation	270	8,0-12,0 cm <sup>3</sup> /1000 strokes	0	3,5
1.5 Full-speed regulation	1480	47,0-53,0 cm <sup>3</sup> /1000 strokes	0,8	
1.6 Start	100	min. 90,0 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing				

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min mm	500 0,9-1,7(0,6-2,0)	800 (3,3-4,7)	1300 4,6-5,3(4,2-5,6)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,1-3,7		1300 6,4-7,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1300 (0,8 bar) 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	1650	max. 1,0	0,8
	1550	7,0-15,0 ( 6,0-16,0)	0,8
	1480	(45,0-55,0)	0,8
	1300	91,0-94,0 (87,5-97,5)	0,8
	1000	(97,0-103,0)	0,8
	*700	80,5-81,5 (77,2-84,8)	0,2
	500	(68,7-76,3)	0

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,1-5,3
MS	0,9-1,1
SVS	max. 6,0
XK	20,2-22,2
XL	11,7-15,1
switch-off	1300 0
Idle stop	400 max. 1,0 320 min. 1,0 270 ( 5,0-15,0)
End stop	120 min. 90,0 250 max. 74,0
2.4 Solenoid	max. cut-in voltage xxx min. 10 V test voltage xxx rated voltage 12V

### Observations

\* Manifold-pressure  
compensator stroke  
= 4,5 mm  
Correction at the  
adjusting nut. (46)

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

46

WPP 001/4 REN 2,0 b

2. Edition

En

VE 4/9 F 2250 R 41

0 460 494 027

Overflow temperature 45° C

 supersedes  
 Renault  
 company  
 engine 852

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting	mm	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
<b>1. Settings</b>	Rot speed rev/min			
1.1 Timing device travel	1400	4,4-4,8	mm	
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery with charge-air pressure	1400	39,0-40,0	cm <sup>3</sup> /1000 strokes	2,5 (3,0)
Full-load delivery without charge-air pressure	--	--	cm <sup>3</sup> /1000 strokes	
1.4 Idle regulation	400	7,5-11,5	cm <sup>3</sup> /1000 strokes	2,5 (3,0)
1.5 Full-speed regulation	2400	17,0-23,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	100	min. 52,0	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent port-closing	1400	--		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 2,6-3,4 (2,3-3,7)	1400 (3,9-5,3)	2000 6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	1000 3,9-4,5		2000 6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110 (40-125)		2250 55-110 (40-125)

## 2.3 Fuel deliveries

## 3. Dimensions

for assembly  
and adjustment  
mm

Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	
End stop	2550	max. 2,0		K	3,2-3,4
	2400	(16,0-24,0)		KF	5,7-5,9
	2200	31,5-33,5 (30,2-34,8)		MS	1,4-1,6
	2100	32,5-34,5 (31,2-35,8)		SVS	max. 3,5
	1400	(37,2-41,8)			
	1000	35,5-38,5 (34,0-40,0)			

switch-off	2250	0		A XK	20,1-22,1
				B XL	9,5-13,3

Observations

Idle stop	650	max. 5,0	
	400	(5,5-13,5)	
End stop	320	min. 45,0	
	430	max. 45,0	

2.4 Solenoid	max. cut-in voltage	xxx min. 10,0 V
	test voltage	rated voltage 12V
	xxxxxxxxxx	

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# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 REN 2,0 d

3. Edition

En

VE 4/9 F 2200 R 69

0 460 494 055

Overflow temperature 45° C

 supersedes 3.83  
 company Renault  
 engine: J 8 S - 702

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

see VDI-W 4007

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	3,9-4,3 mm	0,74	
1.2 Supply-pump pressure	1400	5,1-5,7 bar (kgf/cm <sup>2</sup> )	0,74	
1.3 Full-load delivery with charge-air pressure	600	35,0-36,0 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery without charge-air pressure	1400	50,0-51,5 cm <sup>3</sup> /1000 strokes	0,74	2,5 (3,0)
1.4 Idle regulation	350	9,0-13,0 cm <sup>3</sup> /1000 strokes	0	2,5 (3,0)
1.5 Full-speed regulation	2400	23,0-29,0 cm <sup>3</sup> /1000 strokes	0,74	
1.6 Start	100	min. 60,0 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-	-		

2. Test Specifications		checking values in brackets ( )			
2.1 Timing device	n = rev/min mm	1000 1,8-2,6 (1,5-2,9)	1400 (3,4-4,8)	1800 5,6-6,4 (5,3-6,7)	2000 6,2-7,0 (5,9-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	400 1,9-2,5		1800 6,3-6,9	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138 (40-153)			2200 55-138 (40-153)

2.3 Fuel deliveries				3. Dimensions	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2700	max. 2,0	0,74	K	3,2-3,4
	2500	max. 17,5	0,74		5,7-5,9
	2400	(22,0-30,0)	0,74	KF	1,4-1,6
	2000	42,5-44,5 (41,2-45,8)	0,74		max. 5,3
	1400	(48,2-52,8)	0,74	SVS	
	1000	45,0-48,0 (43,5-49,5)	0,74		
	700	40,0-41,0 (37,5-43,5)	0,2		
	600	(32,5-38,5)	0		
switch-off	2200			AXK	20,2-22,2
				EXL	9,1-12,4

Idle stop	480	max. 2,0	(2,0-10,0) (7,0-15,0)	Observations
	375	4,0-8,0		
	350			
End stop	180	min. 40		
	300	max. 40		

2.4 Solenoid	max. cut-in voltage XXX min. 10,0 V
	rated voltage 12V.

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01.84

⑥

# Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 PEU 2,5 a

1. Edition

VE 4/9 F 2250 R 84  
0 460 494 079

Test pressure line  
6x2x450 mm / i 680 750 073

supersedes  
company: Peugeot  
engine: XD 3

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	5,4-5,8	mm	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery with charge-air pressure	1500	37,5-38,5	cm <sup>3</sup> /1000 strokes	2,5 (3,0)
Full-load delivery without charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes	
1.4 Idle regulation	400	6,0-10,0	cm <sup>3</sup> /1000 strokes	2,5 (3,0)
1.5 Full-speed regulation	2325	23,5-29,5	cm <sup>3</sup> /1000 strokes	
1.6 Start	100	min. 45	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1500	2000
	mm	0,6-1,4 (0,3-1,7)	2,5-3,1 (2,1-3,5)	(4,9-6,3)	8,1-8,9 (7,8-9,2)
2.2 Supply pump	n = rev/min	400		2200	
	bar (kgf/cm <sup>2</sup> )	2,1-2,7		7,5-8,1	
Overflow delivery	n = rev/min	400		2250	
	cm <sup>3</sup> /10 s	55-138 (40-153)		55-138 (40-153)	

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2550	max. 2,0		K	K 1
	2450	4,0-12,0 (4,0-12,0)		KF	5,2-5,4
	2325	(22,5-30,5)		MS	0,9-1,2
	2200	39,6-41,6 (38,3-42,9)		SVS	3,3
	2000	38,9-40,9 (37,6-42,2)			
	1500	(35,7-40,3)			
	1000	37,1-39,7 (35,4-41,4)			
	600	36,3-39,3 (34,8-40,8)			

switch-off

A

B

Idle stop	400	(4,0-12,0)
	440	max. 2,0
End stop	350	min. 45
	450	max. 45

Observations

## 2.4 Solenoid

max. cut-in voltage xxx min. 10 V  
test voltage xxx rated voltage 12V.

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12.83

H2



# Test Specifications

## Distributor-type

## Fuel-injection Pumps

VE 4/11 F 1200 R 94

0 460 414 003

Overflow temperature 45° C

 supersedes  
 company: Steyr  
 engine: WD 411.85

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	4,8-5,2 mm		
1.2 Supply-pump pressure	1000	5,6-6,2 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery with charge-air pressure		cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge-air pressure	1180	65,5-66,5 cm <sup>3</sup> /1000 strokes		3,5(4,0)
1.4 Idle regulation	300	18,0-22,0 cm <sup>3</sup> /1000 strokes		3,5(4,0)
1.5 Full-speed regulation	1300	9,5-15,5 cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 80,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-	-		

### 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	600 1,4-2,2(1,1-2,5)	1000 (4,3-5,7)	1180 6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,0-3,6		1180 6,6-7,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1200 55-138(40-153)

### 3. Dimensions

for assembly  
and adjustment  
mm

2.3 Fuel deliveries	Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	Dimensions
End stop		1370	max. 1,0		K	3,2-3,4
		1320	min. 1,5		KF	5,2-5,4
		1300	( 8,0-17,0)			
		1180	(63,4-68,6)		MS	0,9-1,1
		1000	63,0-65,0 (60,6-67,4)		SVS	max. 3,0
		500	56,0-59,0 (54,1-60,9)			
switch-off		1200	0		XK	20,2-22,2
					XL	10,3-13,8
Idle stop		410	max. 1,0		Observations	
		350	min. 1,5			
		300	(15,5-24,5)			
End stop		170	min. 80,0			
		250	max. 60,0			
2.4 Solenoid		max. cut-in voltage XXX min. 10 V				
		rated voltage 12V.				

⑥

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 STE 6,5 a

2. Edition

En

VE 6/11 F 1300 R 98

0 460 416 021

Overflow temperature 45° C

 supersedes Steyr  
company WD 612.01  
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1000	2,4-2,6	mm	
1.2 Supply-pump pressure	1000	6,1-6,7	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery with charge-air pressure	1280	65,0-66,0	cm <sup>3</sup> /1000 strokes	3,5(4,0)
Full-load delivery without charge-air pressure	300	14,0-18,0	cm <sup>3</sup> /1000 strokes	3,5(4,0)
1.4 Idle regulation	1450	18,0-24,0	cm <sup>3</sup> /1000 strokes	
1.5 Full-speed regulation	100	min. 95,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	-	-		
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	700 0,6-1,4(0,3-1,7)	1000 (1,9-3,3)	1280 3,6-4,4(3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	300 3,4-4,0		1300 7,2-7,8
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1300 55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	1550	max. 1,0	
	1500	min. 1,5	
	1450	(16,5-25,5)	
	1280	(62,9-68,1)	
	1000	72,0-74,0 (69,6-76,4)	
	500	68,5-72,5 (67,1-73,9)	
switch-off	1300	0	
Idle stop	430	max. 1,0	
	360	min. 1,5	
	300	(11,5-20,5)	
End stop	170	min. 95,0	
	250	max. 73,0	

## 3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,4-5,6
MS	1,3-1,5
SVS	max. 6,0
AK	20,2-22,2
AL	8,7-12,0

Observations

2.4 Solenoid

 max. cut-in voltage XXX min. 10V  
 max. voltage XXXX rated voltage 12V.

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02.84

H4

H4

⑥

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 IBE 4,0a

2. Edition

En

VE 4/12 F 1300 R 103

 supersedes Iberica  
 company: T 4.236  
 engine:

0 460 424 004

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
	1000	4,0-4,4	0,8	
1.1 Timing device travel	1000	5,5-6,1	0,8	
1.2 Supply-pump pressure	500	66,0-67,0	0	
1.3 Full-load delivery with charge-air pressure	800	94,0-95,0	0,8	4,0 (4,5)
Full-load delivery without charge-air pressure	300	6,0-12,0	0	3,5 (4,5)
1.4 Idle regulation	1400	64,0-72,0	0,8	
1.5 Full-speed regulation	100	min. 70,0	0	
1.6 Start				
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,8 bar	n = rev/min mm	500 0,4-1,2 (0,1-1,5)	1000 (3,5-4,9)	1300 5,6-6,4 (5,3-6,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	500 3,3-3,9		1300 6,7-7,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110 (40-125)		1300 55-110 (40-125)

## 2.3 Fuel deliveries

## 3. Dimensions

for assembly  
and adjustment  
mm

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	
End stop	1640	max. 1,0	0,8	K	--
	1580	max. 5,0	0,8	KF	5,1-5,4
	1400	(63,0-73,0)	0,8	MS	1,1-1,35
	1300	84,5-87,5 (83,0-89,0)	0,8	SVS	5,0
	800	(91,5-97,5)	0,8		
	*800	91,0-92,0 (87,7-95,3)	0,42		
	500	(62,7-70,3)	0		
switch-off				XK	20,2-22,2
				XL	8,6-11,9
Idle stop	430	max. 1,0		Observations * Manifold-pressure compensator stroke = 4,2 mm Correction at the adjusting nut. (46)	
	370	max. 3,0			
	300	(4,0-14,0)			
End stop	110	min. 70,0			
	210	max. 70,0			
2.4 Solenoid	max cut-in voltage xxxx min. 10,0 V		rated voltage 12V.		

01.84

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H5

⑥

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

**46**

WPP 001/4 STE 6,5 d

2. Edition

En

VE 6/12 F 1100 R 122

0 460 426 029

Overflow temperature 45° C

 01.83  
 supersedes Steyr  
 company WD 612.87  
 engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,8-5,2 mm		
1.2 Supply-pump pressure	800	5,8-6,4 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery with charge-air pressure			cm <sup>3</sup> /1000 strokes	
Full-load delivery without charge-air pressure	1080	80,8-81,8	cm <sup>3</sup> /1000 strokes	3,5
1.4 Idle regulation	300	14,0-18,0	cm <sup>3</sup> /1000 strokes	3,5
1.5 Full-speed regulation	1200	11,0-17,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	100	min. 95,0	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent port-closing				

**2. Test Specifications**

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	500 1,3-2,1 (1,0-2,4)	800 (4,3-5,7)	1080 6,9-7,7 (6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	500 4,3-4,9		1080 7,2-7,8
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138 (40-153)		1100 55-138 (40-153)

**2.3 Fuel deliveries**

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	1250	max. 1,0	
	1200	( 9,0-19,0	
	1150	45,5-54,5 (45,0-55,0)	
	1080	(78,0-84,3)	
	800	80,0-82,0 (78,0-84,0)	
	500	78,5-81,5 (76,3-83,7)	

**3. Dimensions**for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	max. 6,0

switch-off	1100	0
------------	------	---

Idle stop	450	max. 1,0
	350	0,5-6,5
	300	(11,0-21,0)

End stop	170	min. 100
	250	max. 75

2.4 Solenoid	max. cut-in voltage	xxxx min. 10 V
	test voltage	rated voltage 12V.

Observations

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02.84

H6

H6

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 REN 2,0 h

2. Edition

En

VE 4/9 F 2100 R 130

0 460 494 128

Overflow temperature 45° C

 10.83  
 supersedes  
 REN  
 company:  
 engine: 18S-234

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
	1400	4,0-4,4	0,8	
1.1 Timing device travel	1400	5,1-5,7 mm	0,8	
1.2 Supply-pump pressure	1400	46,0-47,0 bar (kgf/cm <sup>2</sup> )	0,8	2,5(3,0)
1.3 Full-load delivery with charge-air pressure	600	30,3-31,3 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery without charge-air pressure	375	4,0-8,0 cm <sup>3</sup> /1000 strokes	0	2,5(3,0)
1.4 Idle regulation	2300	18,0-24,0 cm <sup>3</sup> /1000 strokes	0,8	
1.5 Full-speed regulation	100	min. 50,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Start	-			
1.7 Load-dependent port-closing	-			

## 2. Test Specifications

checking values in brackets ( )

	n = rev/min	1000	1400	1800	2000
2.1 Timing device LDA=0,8 bar	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	5,8-6,6(5,5-6,9)	6,1-6,9(5,8-7,2)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	400 1,9-2,5		1800 6,3-6,9	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		2100 55-138(40-153)	

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2600	max. 2,0	0,8
	2400	max. 14,0	0,8
	2300	(17,0-25,0)	0,8
	2000	38,0-41,0 (37,2-41,8)	0,8
	1400	(44,2-48,8)	0,8
	1000	41,5-44,5 (40,0-46,0)	0,8
	700 *	35,3-36,3 (32,8-38,8)	0,2
	600	(27,8-33,8)	0

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	5,5
A XK	20,2-22,2
B XL	7,7-11,0

switch-off electr.	400	0
Idle stop	350	9,0-13,0 (7,0-15,0)
	375	(2,0-10,0)
	480	max. 2,0
End stop	170	min. 40
	300	max. 40
2.4 Solenoid	max. cut-in voltage	xxx min. 10 V
	rated voltage	12V.

## Observations

Manifold-pressure  
 \* compensator stroke  
 = 4,5 mm  
 Correction at the  
 adjusting nut. (46)

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⑥

# Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 MAN 5,6 g

1. Edition

VE 6/12 F 1400 R 132

0 460 426 032

superseded

company

engine

MAN

D 0226 MK 141 kW

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm  $\pm$  0,02 mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,1-3,5 mm	1,0	
1.2 Supply-pump pressure	800	5,2-5,8 bar (kgf/cm <sup>2</sup> )	1,0	4,0(4,5)
1.3 Full-load delivery with charge-air pressure	1000	119,0-120,0 cm <sup>3</sup> /1000 strokes	1,0	
Full-load delivery without charge-air pressure	630	81,0-82,0 cm <sup>3</sup> /1000 strokes		3,5(4,5)
1.4 Idle regulation	300	10,0-16,0 cm <sup>3</sup> /1000 strokes		
1.5 Full-speed regulation	1440	104,0-112,0 cm <sup>3</sup> /1000 strokes	1,0	
1.6 Start	100	min. 75,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	800		1,0	

## 2. Test Specifications checking values in brackets ( )

2.1 Timing device	n = rev/min mm	500 1,5-2,3(1,2-2,6)	800 (2,6-4,0)	1100 4,2-5,0(3,9-5,3)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	200 2,3-2,9		1400 7,3-7,9
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s			1400 55-138(40-153)

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	1620	max. 3,0	1,0
	1550	32,0-40,0 (31,0-41,0)	1,0
	1440	(103,0-113,0)	1,0
	1400	115,5-118,5 (114,0-120,0)	1,0
	1000	(116,5-122,5)	1,0
	800	121,0-125,0 (119,2-126,8)	1,0
	630	118,0-122,0 (116,2-123,8)	1,0
	*630	111,5-112,5 (108,2-115,8)	0,4
	630	81,0-82,0 (77,7-85,3)	0
switch-off			

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	-
KF	5,7-6,0
MS	1,0-1,25
SVS	2,7
A	
B	

Idle stop	400	max. 2,0	
	350	max. 5,0	
	300	(8,0-18,0)	
End stop	320	min. 90,0	
	430	max. 90,0	
2.4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	test voltage	xxxxxx rated voltage 12V.	

### Observations

\*Manifold-pressure  
compensator stroke  
= 7,5 mm  
Correction at the  
adjusting nut. (46)

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H8

# Test Specifications

## Distributors-type

### Fuel-injection Pumps

WPP 001/4 VWV 1,6 V 5

2. Edition

VE 4/9 F 2250 R 134-1

0 460 494 134

supersedes 7.83

company VWV

engine 086 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

- mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,3-3,7 mm	0,75	
1.2 Supply pump pressure	1500	4,6-5,2 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery without charge-air pressure	600	22,5-23,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	42,5-43,5 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1.4 Idle speed regulation	450	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 35,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,8-4,2)	2250 6,0-6,8 (5,7-7,1)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,5-3,1		2250 6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2250 (0,75 bar) 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2750 2525 2250 1500 1000 * 600	max. 3,0 (8,0-16,0) 38,0-40,0 (36,8-41,2) (40,8-45,2) 32,5-33,5 (30,8-35,2) (20,0-26,0)	0,75 0,75 0,75 0,75 0,3 0	K KF MS SVS	3,2-3,4 5,7-6,0 1,2-1,4 5,7
switch-off mech. elektr.	2250 400	0 0		A B	
Idle stop	450 1200	max. 9,0 (4,0-12,0)			
End stop	400 500	min. 21,0 max. 29,0			
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V rated voltage 12V.				

## 3. Dimensions

for assembly  
and adjustment  
mm

### Observations

\* Manifold-pressure  
compensator stroke  
= 4,0 mm  
Correction at the  
adjusting nut. (46)

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

VE 4/9 F 2250 R 134-2

0460 494 135

 supersedes 7.83  
 company VWV  
 engine 086 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

### 1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,3 - 3,7 mm	0,75 bar	
1.2 Supply pump pressure	1500	4,6-5,2 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery without charge-air pressure	600	22,5-23,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	42,5-43,5 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1.4 Idle speed regulation	475	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 35,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery	-			

### 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
LDA = 0,75 bar mm		2,3-2,1 (1,0-2,4)	(2,8-4,2)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	600		2250
LDA = 0,75 bar bar (kgf/cm <sup>2</sup> )		2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600		2250 (0,75 bar)
		55-138 (40-153)		55-138 (40-153)

### 2.3 Fuel deliveries

### 3. Dimensions

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2750	max. 3,0	0,75 bar	K	3,2-3,4
	2525	(8,0-16,0)	0,75 bar	KF	5,7-6,0
	2250	38,0-40,0 (36,8-41,2)	0,75 bar	MS	1,2-1,4
	1500	(40,8-45,2)	0,75 bar	SVS	3,2
*	1000	32,5-33,5 (30,8-35,2)	0		
	600	(20,0-26,0)			
switch-off elektr.	400	0		A	
				B	
Idle stop	475	(4,0-12,0)			
	1200	max. 4,0			
End stop	400	min. 21,0			
	500	max. 29,0			
2.4 Solenoid	max cut-in voltage	xxxx min. 10,0 V			
	rated voltage	xxxxxxx rated voltage 12V.			

Observations

\*Manifold-pressure compensator stroke = 4,0 mm  
Correction at the adjusting nut. (46)



# Test Specifications

## Distributor-type

## Fuel-injection Pumps

VE 4/9 F 2250 R 134-4

0 460 494 137

supersedes 10.83

company VWV

engine: 086 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-

mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1500	3,2-3,7 mm	0,75	
1 2 Supply pump pressure	1500	4,6-5,2 bar (kgf/cm <sup>2</sup> )	0,75	
1 3 Full-load delivery without charge-air pressure	600	22,5-23,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery with charge-air pressure	1500	42,5-43,5 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1 4 Idle speed regulation	475	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1 5 Start	100	min. 35 cm <sup>3</sup> /1000 strokes	0	
1 6 Full-load speed regulation	2525	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75	
1 7 Load-dependent start of delivery	-			

## 2. Test Specifications

checking values in brackets ( )

2 1 Timing device LDA=0,75 bar	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,8-4,2)	2250 6,0-6,8 (5,7-7,1)
2 2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,5-3,1		2250 6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 (0 bar) 55-138 (40-153)		2250 (0,75 bar) 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	38,0-40,0 (36,7-41,3)	0,75
	1500	(40,7-45,3)	0,75
	1000 *	32,5-33,5 (30,7-35,3)	0,30
	600	(20,0-26,0)	0

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	3,2
A	
B	
switch-off elect.	400 0
Idle stop	4/5 1200 1125 **
End stop	400 500
2 4 Solenoid	max. cut-in voltage test voltage

Observations

Please note instruc-  
tions on sheet 2

\* Manifold-pressure compensator stroke = 4,0

\*\* Setting point for EGR

Pull control lever toward full load untill gauge fits over driver and housing cover web. Measure delivery.

⑥

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,6 V 9

2. Edition

En

VE 4/9 F 2400 R 138

Overflow temperature 45° C

0 460 494 131

supersedes 7.83

company VWV

engine 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

Testoil-ISO 4113

## 1. Settings

	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,9 - 3,3 mm		
1.2 Supply pump pressure	1500	4,3 - 4,9 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0 cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	475	6,0-10,0 cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	100	min- 35,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	2600	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing				

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,4-2,8)	2400 6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	600 2,2-2,8		2400 6,4-7,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (31,3-35,7) 21,5-24,5 (20,0-26,0)		K KF MS SVS * FH	3,2-3,4 5,7-6,0 1,3-1,5 2,7 1,8-2,4
switch-off electr.	400	0		A B	
Idle stop	475 650 1200	(4,0-12,0) max. 6,0 max. 5,0		Observations  *operating stroke (cold-start accel.)	
End stop	400 500	min. 18,0 max. 23,5			
2.4 Solenoid	cut-in voltage	min 10,0 V rated voltage 12V			

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12.83

H43

H13

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

WPP 001/4 VWV 1,6 W 2

2. Edition

En

VE 4/9 F 2400 R 138-1

0 460 494 140

superseries 7/83

company VWV

engine 086

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

### 1. Settings

	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,9-3,3	mm	
1.2 Supply pump pressure	1500	4,3 - 4,9	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes	2,5 (3,0)
Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes	
1.4 Idle speed regulation	450	6,0-10,0	cm <sup>3</sup> /1000 strokes	2,0 (3,0)
1.5 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	
1.6 Full-load speed regulation	2600	11,0-17,0	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent start of delivery				

### 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,3-2,1 (1,0-2,4)	(2,4-3,8)	6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min	600		2400
	bar (kgf/cm <sup>2</sup> )	2,2-2,8		6,4-7,0
Overflow delivery	n = rev/min	600		2400
	cm <sup>3</sup> /10 s	55-138 (40-153)		55-138 (40-153)

### 3. Dimensions

for assembly  
and adjustment  
mm

Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	
End stop	2800	max. 3,0		K	3,2-3,4
	2600	(10,0-18,0)		KF	5,7-6,0
	2400	27,5-29,5 (26,3-30,7)		MS	1,3-1,5
	1500	(31,3-35,7)		SVS	2,7
	600	21,5-24,5 (20,0-26,0)		*FH	1,8-2,4
switch-off				A	
mech.	2400	0		B	
elektr.	400	0			
Idle stop	450	(4,0-12,0)			
	650	max. 5,0			
	1200	max. 7,0			
End stop	400	min. 18,0			
	500	max. 23,5			
2.4 Solenoid	max. cut-in voltage	xxxx min. 10 V			
	test voltage	rated voltage 12V.			

Observations

\*operating  
stroke (KSB)

⑥

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 IHC 3,9 y

1. Edition

En

VE 4/11 F 1150 R 140  
C 460 414 009

Nozzle-and-holder assembly company IHC  
1 688 901 020 (172 + 3 bar) engine DT 239/856

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,5-4,9 mm	0,8 bar	
1.2 Supply-pump pressure	800	5,3-5,9 bar (kgf/cm <sup>2</sup> )	0,8 bar	
1.3 Full-load delivery with charge-air pressure	500	76,5-77,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery without charge-air pressure	800	95,5-96,5 cm <sup>3</sup> /1000 strokes	0,8 bar	3,5 (4,0)
1.4 Idle regulation	350	28,0-32,0 cm <sup>3</sup> /1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	1250	27,0-33,0 cm <sup>3</sup> /1000 strokes	0	
1.6 Start	100	min. 100 cm <sup>3</sup> /1000 strokes	0,8 bar	
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications checking values in brackets ( )

2.1 Timing device LDA = 0,8 bar	n = rev/min mm	400 0,8-1,6 (0,5-1,9)	800 (4,0-5,4)	1150 5,3-6,1 (5,0-6,4)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	400 3,7-4,3		1150 6,4-7,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138 (40-153)		1150 (0,8 bar) 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )
End stop	1300	max. 2,5	0,8 bar
	1250	(25,5-34,5)	0,8 bar
	1130	88,0-91,0 (86,9-92,1)	0,8 bar
	800	(93,4-98,6)	0,8 bar
	750 *	88,5-89,5 (85,6-92,4)	0,3 bar
	500	(73,6-80,4)	0
switch-off:			
Idle stop	350	(25,5-34,5)	
	400	10,0-16,0 (8,5-17,5)	
	450	max. 3,0	
	220	min. 100	
End stop	300	max. 80	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	
KF	5,2-5,4
MS	1,2-1,4
SVS	5,0
A XK	20,2-22,2
B XL	12,3-15,7

## Observations

\* Manifold-pressure  
compensator stroke  
= 4,9 mm  
Correction at the  
adjusting nut. (46)

2.4 Solenoid max. cut-in voltage  
xxxx min. 10 V  
test voltage rated voltage 12V.

12.83

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H15

⑥

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 1,9 e

1. Edition

En

VE 4/9 F 2300 R 141

0 460 494 132

DHK: 1 688 901 022/130 bar

Test pressure line

6x2x450 mm / 1 680 750 073

Overflow temperature 45° C

superseded by  
company X 8/43  
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting

mm

## 1. Settings

	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3-4,7	mm	
1.2 Supply-pump pressure	1500	5,6-6,2	bar (kgf/cm <sup>2</sup> )	
1.3 Full-load delivery with charge-air pressure	1500	31,0-32,0	cm <sup>3</sup> /1000 strokes	2,5(3,0)
Full-load delivery without charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes	
1.4 Idle regulation	350	9,0-13,0	cm <sup>3</sup> /1000 strokes	2,5(3,0)
1.5 Full-speed regulation	2500	11,0-17,0	cm <sup>3</sup> /1000 strokes	
1.6 Start	100	min. 55,0	cm <sup>3</sup> /1000 strokes	
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,7-2,5(1,4-2,8)	(3,8-5,2)	7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min	400		2300
	bar (kgf/cm <sup>2</sup> )	2,8-3,4		7,4-8,0
Overflow delivery	n = rev/min	400		2300
	cm <sup>3</sup> /10 s	55-138(40-153)		55-138(40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2600	6,2-6,8 ( 6,1-6,9)		K	3,1-3,4
	2500	(10,0-18,0)		KF	5,7-5,9
	2400	21,0-27,0(20,0-28,0)		MS	1,7-1,9
	2250	32,7-34,7(31,4-36,0)		SVS	2,8
	1500	(29,2-33,8)			
	1000	30,7-33,3(29,0-35,0)			
	600	32,0-35,0(30,5-36,5)			

## 3. Dimensions

for assembly  
and adjustment  
mm

				XK	20,2-22,2
				A	
				XL	10,3-13,7
				B	

switch-off

Idle stop	350	(7,0-15,0)		Observations
	400	max. 4,0		
	540	0		
End stop	300	min. 45,0		
	400	max. 46,0		

## 2.4 Solenoid

max. cut-in voltage xxx min. 10 V  
rated voltage 12V.

**Testoil ISO 4113**

⑥

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

46

WPP 001/4 REN 2,0 k

1. Edition

En

VE 4/9 F 2200 R 153

0 460 494 141

 supersedes  
 company Renault  
 engine J8S-709

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

### 1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	3,9- 4,3 mm	0,8	
1.2 Supply-pump pressure	1400	5,1- 5,7 bar (kgf/cm <sup>2</sup> )	0,8	
1.3 Full-load delivery with charge-air pressure	1400	50,0-51,0 cm <sup>3</sup> /1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	600	35,0-36,0 cm <sup>3</sup> /1000 strokes	0	
1.4 Idle regulation	350	9,0-13,0 cm <sup>3</sup> /1000 strokes	0	2,5 (3,0)
1.5 Full-speed regulation	2400	23,0-29,0 cm <sup>3</sup> /1000 strokes	0,8	
1.6 Start	100	min. 60,0 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-			

### 2. Test Specifications

checking values in brackets ( )

	n = rev/min	1000	1400	1800	2000
2.1 Timing device	mm	1,8-2,6 (1,5-2,9)	(3,4-4,8)	5,6-6,4 (5,3-6,7)	6,2-7,0 (5,9-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	400 1,9-2,5		1800 6,3-6,9	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	300 55-138 (40-153)		2200 55-138 (40-153)	

### 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2700	max. 2,0	0,8
	2500	max. 17,5	0,8
	2400	(22,0-30,0)	0,8
	2000	42,5-44,5 (41,2-45,8)	0,8
	1400	(48,2-52,8)	0,8
	1000	45,0-48,0 (43,5-49,5)	0,8
	*700	40,0-41,0 (37,5-43,5)	0,2
	600	(32,5-38,5)	0
switch-off	2200	0	
Idle stop	480	max. 2,0	
	375	4,0-8,0 (2,0-10,0)	
	350	(7,0-15,0)	
End stop	180	min. 40,0	
	300	max. 40,0	

### 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	3,6

A

B

### Observations

\* Manifold-pressure compensator stroke = 4,5 mm  
Correction at the adjusting nut. (46)

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H17

H17

# Test Specifications

## Distributor-type

## Fuel-injection Pumps

En

46

WPP 001/4 REN 2,0 k 1

1. Edition

VE 4/9 F 2200 R 153-1

0460 494 156

 supersedes  
 company: Renault  
 engine: J8S-T 01

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	3,9 - 4,3 mm	0,8	
1.2 Supply-pump pressure	1400	5,1 - 5,7 bar (kgf/cm <sup>2</sup> )	0,8	
1.3 Full-load delivery with charge-air pressure	1400	50,0 - 51,0 cm <sup>3</sup> /1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	600	35,0 - 36,0 cm <sup>3</sup> /1000 strokes	0	
1.4 Idle regulation	350	9,0 - 13,0 cm <sup>3</sup> /1000 strokes	0	2,5 (3,0)
1.5 Full-speed regulation	2400	23,0 - 29,0 cm <sup>3</sup> /1000 strokes	0,8	
1.6 Start	100	min. 60,0 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing				

## 2. Test Specifications

checking values in brackets ( )

		1000	1400	1800	2000
2.1 Timing device	n = rev/min				
	mm	1,8-2,6 (1,5-2,9)	(3,4-4,8)	5,6-6,4 (5,3-6,7)	6,2-7,0 (5,9-7,3)
2.2 Supply pump	n = rev/min	400		1800	
	bar (kgf/cm <sup>2</sup> )	1,9 - 2,5		6,3 - 6,9	
Overflow delivery	n = rev/min	500		2200	
	cm <sup>3</sup> /10 s	55-138 (40-153)		55-138 (40-153)	

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2700	max. 2,0	0,8
	2500	max. 17,5	0,8
	2400	(22,0-30,0)	0,8
	2000	42,5-44,5 (41,2-45,8)	0,8
	1400	(48,2-52,8)	0,8
	1000	45,0-48,0 (43,5-49,5)	0,8
	*700	40,0-41,0 (37,5-43,5)	0,2
	600	(32,5-38,5)	0
switch-off	2200	0	
Idle stop	480	max. 2,0	
	375	4,0-8,0 (2,0-10,0)	
	350	(7,0-15,0)	
End stop	180	min. 40,0	
	300	max. 40,0	

## 3. Dimensions

for assembly  
and adjustment  
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,4-1,6
SVS	3,6
A	
B	

## Observations

\* Manifold-pressure compensator stroke = 4,5 mm  
Correction at the adjusting nut. (46)

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# Test Specifications Distributor-type Fuel-injection Pumps

VE 4/9 F 2300 L 157

Test pressure line

supersedes

company:

Fiat

0 460 494 144

6x2x450 mm / 1 680 750 073

engine:

X8/48

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3-4,7 mm		
1.2 Supply-pump pressure	1500	5,6-6,2 bar (kgf/cm <sup>2</sup> )		
1.3 Full-load delivery with charge-air pressure	1500	31,0-32,0 cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	350	9,0-13,0 cm <sup>3</sup> /1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2500	11,0-17,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 55,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

checking values in brackets ( )

		800	1500	2000	2300
2.1 Timing device	n = rev/min mm	1,7-2,5 (1,4-2,8)	(3,8-5,2)	5,8-6,4 (5,4-6,8)	6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	400		2300	
		2,9-3,5		7,4-8,0	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	400		2300	
		55-138 (40-153)		55-138 (40-153)	

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )
End stop	2600	0,5-6,5	
	2500	(10,0-18,0)	
	2400	21,0-27,0 (20,0-28,0)	
	2250	33,4-35,4 (32,1-36,7)	
	1500	(29,2-33,8)	
	1000	30,7-33,3 (29,0-35,0)	
	600	31,5-34,5 (30,0-36,0)	

## 3. Dimensions

for assembly  
and adjustment  
mm

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	Dimensions
End stop	2600	0,5-6,5		K	3,1-3,4
	2500	(10,0-18,0)		KF	5,7-6,0
	2400	21,0-27,0 (20,0-28,0)		MS	1,4-1,65
	2250	33,4-35,4 (32,1-36,7)		SVS	2,8
	1500	(29,2-33,8)			
	1000	30,7-33,3 (29,0-35,0)			
	600	31,5-34,5 (30,0-36,0)			

switch-off

A

B

Idle stop	350	7,0-15,0)	Observations
	400	0,5-6,5	
	450	max. 1,5	
End stop	300	min. 45,0	
	400	max. 46,0	
2.4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	test voltage	rated voltage 12V.	
	xxxxxxx		

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⑥

# Test Specifications Distributor-type Fuel-injection Pumps

En

46

WPP 001/4 REN 2,0f

1. Edition

VE 4/9 F 2250 R 158

0 460 494 145

Overflow temperature 45° C

supersedes

company Renault

engine J85-706

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

## 1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,4-4,8 mm		
1.2 Supply-pump pressure	1400	4,9-5,5 bar (kgf/cm <sup>2</sup> )		2,5 (3,0)
1.3 Full-load delivery with charge-air pressure	1400	39,0-40,0 cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge-air pressure	-	- cm <sup>3</sup> /1000 strokes		
1.4 Idle regulation	400	7,5-11,5 cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	2400	17,0-23,0 cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 52,0 cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min mm	1000 2,6-3,4 (2,3-3,7)	1400 (3,9-5,3)	2000 6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm <sup>2</sup> )	1000 3,9-4,5		2000 6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138 (40-153)		2250 55-138 (40-153)

## 2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm <sup>2</sup> )	Designation	for assembly and adjustment mm
End stop	2250	max. 2,0		K	3,2-3,4
	2400	(16,0-24,0)		KF	5,7-5,9
	2200	31,5-33,5 (30,2-34,8)		MS	1,4-1,6
	2100	32,5-34,5 (31,2-35,8)		SVS	max. 3,6
	1400	(37,2-41,8)			
	1000	35,5-38,5 (34,0-40,0)			

switch-off

2250

0

XK

XL

Idle stop

650

max. 5,0

400

(5,5-13,5)

End stop

320

min. 45,0

430

max. 45,0

Observations

## 2.4 Solenoid

max. cut-in voltage XX min. 10 V

test voltage XXXXX rated voltage 12V.

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H20

H20

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6 e

1. Edition

En

VE 4/9 F 2000 R 160

0 460 494 149

 supersedes  
company VWV  
engine 068.5 T

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting	mm	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm <sup>2</sup> )	Difference in delivery cm <sup>3</sup>
<b>1. Settings</b>					
1.1 Timing device travel		1500	3,2-3,6 mm	0,75	
1.2 Supply-pump pressure		1500	5,5-6,1 bar (kgf/cm <sup>2</sup> )	0,75	
1.3 Full-load delivery with charge-air pressure		600	24,5-25,5 cm <sup>3</sup> /1000 strokes	0	
Full-load delivery without charge-air pressure		1500	41,5-42,5 cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
1.4 Idle regulation		475	6,0-10,0 cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation		2110	9,0-15,0 cm <sup>3</sup> /1000 strokes	0,75	
1.6 Start		100	min. 35,0 cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing		-	-		

## 2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 1,2-2,0 (0,9-2,3)	1500 (2,7-4,1)	1980 5,2-6,0 (4,9-6,3)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm <sup>2</sup> )	600 3,4-4,0		1980 6,6-7,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		1980 (0,75 bar) 55-138 (40-153)

## 3. Dimensions

for assembly  
and adjustment  
mm

Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm <sup>2</sup> )	Designation	
End stop	2150	max. 4,0	0,75		
	2110	(8,0-16,0)	0,75	K	3,2-3,4
	1980	39,0-41,0 (37,7-42,3)	0,75	KF	5,65-5,95
	1500	(39,7-44,3)	0,75		
	1000	33,5-34,5 (31,0-37,0)	0,3	MS	1,2-1,4
	600	24,5-25,5 (22,0-28,0)	0	SVS	5,7
switch-off elektr.	400	0		A	
				B	
Idle stop	475	(4,0-12,0)			Observations
	600	max. 3,0			
End stop	350	min. 32,0			
	450	max. 38,0			After each LDA pressure change operate control lever.
2.4 Solenoid	max. cut-in voltage	xxxx min., 10 V			
	rated voltage	12V.			

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# Test Specification Testoil-ISO 4113

## Fuel Injection Pumps and Governors

WPP 001/4 HAN 10,8 e

5. Edition

En

supersedes 6.79

PE 6 A 95 D 320 RS2364  
RS2364  
RS2557

EP/RSV 350-1100 A8 B1104DR (1)  
350-1100 A8 B1103DR (2)  
350-1100 A8 B1116DR (3)  
ARC 1116 R (3)

company M-Hanomag  
engine D 562 (1)  
D 963 (2)  
D 963 (3)

\*\* Cold-start test according to VDT-I-420/114  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)  
(2,10-2,30)

Rotational speed rev/min	Control rod travel mm	Fuel delivery (2 - 3) cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery (1) cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,8	10,5 - 10,7	0,3(0,6)	10,0	9,0 - 9,3	
350	+0,1	0,9 - 1,4	0,3(0,5)	+0,1	1,4 - 2,0	
700/500	- - -	C, 4-5	0,4(0,7)	6,7-6,9		

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

1104DR (1)

Upper rated speed			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.25	350	5,5	1100	
	x =	4,5					100	min. 19	10,7-10,8	
							350	5,9-6,1	500	
ca.56	9,0	1140-1150					490-550	=2,0	11,4-11,5	
5	4,0	1170-1200					650	0 - 1		
	1370	0,3 - 1,7								

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery idle		5a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
(1) 1100	89,0 - 91,0 (87,0 - 93,0)	1140-1150*		700	93,0 - 96,0 (91,0 - 98,0)	100	20,0-20,5 mm RW **		
				500	83,5 - 86,5 (81,5 - 88,5)				./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

**B. Governor Settings**

1103DR u. 1116DR (2-3)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.25	350	5,5	1100	10,8-10,9
	x =	5,5					100	min. 19	975	11,0-11,2
							350	5,9-6,1	11,0	11,2
							490-550	=2,0	500	11,5-11,6
							650	0 - 1		
ca.56	9,8	1140-1150								
②a	4,0	1180-1210								
	1365	0,3 - 1,7								

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ) rev/min		-					
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
(2-3)									
1100	103,5 - 105,5 (101,5 - 107,5)	1140-1150*	700	109,5 - 112,5 (107,5 - 114,5)					
			500	105,0 - 107,0 (103,0 - 109,0)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113****B. Governor Settings**

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ) rev/min		-					
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

En

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 HAN 10,8 h

4. Edition

En

supersedes 10.81

company MF-Hanomag

engine D 962

PE 6 A 95 D 320 RS2557 EP/RSV 350-1100 A8B1117DR

A8C 1117 R

Komb.-Nr. 0 400 676 157

\*\* Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke <sup>2,15-2,25</sup>  
(2,10-2,30) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1100	10,0+0,1	9,1 - 9,3	0,3(0,6*)			
400	7,9-8,1	3,6 - 4,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
100%	800	0,3-1,0	-	-	-	ca. 23	400	7,5		
	X =	4,50					100	min. 19	1100	10,0+0,1
							400	7,9-8,1	960	10,2+0,2
							580-640	= 2,0	500	10,6+0,1
ca. 52	1140-1150	= 9,0					700	max. 1,0		
⑤	1205-1235	= 4,0								
	1375	= 0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1100	89,0 - 91,0 (87,0 - 93,0)	1140-1150*	700	73,0 - 96,0 (91,0 - 98,0)	100	19-21mm <sup>2</sup>	**	-	-
			500	83,5 - 86,5 (81,5 - 88,5)					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.93

**BOSCH**

Geschäftsbereich KM Kundendienst Kfz-Ausrüstung  
by Robert Bosch GmbH D-7 Stuttgart Postfach 50 Printed in the Federal Republic of Germany  
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DEE 7,6 f

1. Edition

En

PES 6 A 100 D 410 RS 3038 RSV 400-1100 A 2 B 2120 L  
Komb.-Nr. 9 400 230 032

supersedes  
company John Deere  
engine 6 466 AT-05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05  
(1,90-2,10) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm/100 strokes	Difference cm/100 strokes	Control rod travel mm	Fuel delivery cm/100 strokes	Spring pre-tensioning torque (control valve) mm
1	2	3	4	2	3	5
1100	10,8+0,1	10,8-11,0	0,3			
400	6,6-6,8	1,3-1,7	0,3			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Loose	800	0,3-1,0	-	-	-	ca. 17	400	6,1	1100	10,8-10,9
									650	11,8-12,1
ca. 40	9,8	1145-1155					100	min. 19,0		
	4,0	1205-1235					400	6,6		
2a	1300	0,3-1,7					480-540	= 2,0		
							850	max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min				Idle			
rev/min	cm/1000 strokes	3		rev/min	cm/1000 strokes	rev/min	cm/1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1100	108,0-110,0 (105,0-113,0)	1145-1155*		650	115,5-118,5 (112,5-121,5)	100	170,0-195,0 = 21,0 mm RW	-	-
						High	idle speed		
						1200	27,0-37,0		
						Low	idle speed		
						400	13,0-17,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

**BOSCH**

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung  
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J1

J1

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1 a

4. Edition

En

PES 6 A 85 D 410/3 RS 2366 EP/RSV 325-1400 A8B674D, 707 D  
325-1150 A8B674D, 707 D

supersedes 6.82  
company K H D  
engine BF 6 L 913

RS 2415

\*\*\* Instruction:

RS 2532

Test details see page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning torque control valve mm
1	2	3	4	5	6	7
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Large control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 69	1400	16,0	without auxiliary spring			ca. 20	325	5,5	1400	0
	1450	10,5					200	19 - 21		
	1500	4,0					325	5,2-5,8		
ca. 68	1400	ca. 10,0	with auxiliary spring				500	1,2-3,3	500	1,2-1,4
2a	1510	ca. 4,0					650	0 -1,5		
	1600	0,3-1,5								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 4a Idle stop	
Test oil temp. 40 °C (104 °F)		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar		LDA	0,7 bar					
***		****	***		100	119,5-129,5	325	5,5*	
			LDA	0 bar					
			500	43,5 - 47,5					
(increase by 1,0 cm <sup>3</sup> /l)								./.	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH**

Geschäftsbereich Kfz-Kundendienst Kfz-Ausrüstung  
1980 by Robert Bosch GmbH Postfach 50 D 7000 Stuttgart 1, Postfach in the Federal Republic of Germany  
Importeur: République Fédérale d'Allemagne par Robert Bosch GmbH



The numbers denote the sequence of the tests

**B. Governor Settings**

EP/RSV 325-1150 A8B674D, 707 D

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1150 1200 1250	16,0 11,1 5,4	without auxiliary spring			ca. 21	325	5,5	1130	0
	1220 1300 1380	7,5-10,4 1,3-3,6 0,3-1,5					200 325 500 660	19 - 21 5,5-5,8 1,4-3,4 0 - 1,5	500	1,0-1,2
②a			with auxiliary spring							

**C. Settings for Fuel Injection Pump with Fitted Governor**

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ) rev/min				Idle		Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	9
1 LDA	2 0,7 bar			4 LDA	5 0,7 bar	6	7	8	
***		****		***		100	119,0-129,	5;325	5,5**
				LDA 500	0 bar 43,5 - 47,5				
***	See page 3								

Checking values in brackets

\* 1 mm less control rod travel than col 2

**D. Adjustment Test for Manifold Pressure Compensator**Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing pressure - in bar gauge pressure  
XXXXXX

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm XXXXXXXX
all governors	0,38	0,10	0,2 - 0,3 1,6 - 2,0

Notes

(1) when n =

rev/min and  
gauge pressure

bar ( maximum full load control rod travel)

En

## C. Settings for Fuel Injection Pump with Fitted Governor

- 3 -

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

BF 6 L 913 - PES 6 A D..RS2366, 2415

F or B output at ... min<sup>-1</sup>

1400	88,0 - 90,0	1420	800	80,0 - 83,0	160 PS	/	n = 2800
1400	84,0 - 86,0	1420	800	66,0 - 69,0	142 PS	/	n = 2800
1325	90,5 - 92,5	1340	850	88,5 - 90,5	168 PS	/	n = 2650
1325	87,5 - 89,5	1340	800	82,5 - 85,5	160 PS	/	n = 2650
1325	82,5 - 84,5	1340	800	67,5 - 70,5	140 PS	/	n = 2650
1250	87,0 - 89,0	1270	800	84,5 - 87,5	160 PS	/	n = 2500
1250	83,0 - 85,0	1270	800	77,5 - 80,5	148 PS	/	n = 2500
1250	81,0 - 83,0	1270	800	75,5 - 77,5	140 PS	/	n = 2500
1200	86,0 - 88,0	1220	800	84,5 - 87,5	156 PS	/	n = 2400
1200	78,0 - 80,0	1220	800	68,0 - 71,0	135 PS	/	n = 2400
1165	84,0 - 86,0	1180	800	84,5 - 87,5	152 PS	/	n = 2330
1150	83,5 - 85,5	1165	800	84,5 - 87,5	152 PS	/	n = 2300
1150	79,0 - 81,0	1165	800	72,0 - 74,0	142 PS	/	n = 2300
1100	82,0 - 84,0	1115	800	84,5 - 87,5	147 PS	/	n = 2200
1075	82,0 - 84,0	1090	800	84,5 - 87,5	144 PS	/	n = 2150
1075	78,0 - 80,0	1090	800	76,0 - 79,0	136 PS	/	n = 2150
1050	76,5 - 78,5	1065	800	73,5 - 76,5	130 PS	/	n = 2100
1000	82,5 - 84,5	1015	800	84,5 - 87,5	137 PS	/	n = 2000
1000	77,0 - 79,0	1015	800	79,5 - 82,5	130 PS	/	n = 2000
900	82,0 - 84,0	910	800	84,5 - 87,5	125 PS	/	n = 1800
875	68,0 - 70,0	885	800	66,0 - 69,0	106 PS	/	n = 1750
750	85,0 - 87,0	760	-	-	105 PS	/	n = 1500
750	78,0 - 80,0	760	-	-	100 PS	/	n = 1500

## Please note

1. \*\* With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0,3 - 1,0 before the stop.
2. LDA adjustment to be carried out according to VDT-W- 420/305
3. Dimension H = 22,5 mm = basic setting of LDA.

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 g 4

5. Edition

En

**Testoil-ISO 4113**

PES 4 M 50 C 320 RS 103

RSF 375/2250 M 19

Komb. Nr. 0 400 074 978

Sales model

0 400 074 977

supersedes 12.82

company Daimler-Benz

engine OM 615

44 kW (60 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 mm (from BDC) 18,5-21,5 Control rod travel  
(1,65-1,85)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	5
1000	12,7 <sup>+0,1</sup>	3,2-3,3	0,25 (0,3)			
375	6,9-7,1	0,65-0,75	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in 

Checking values in brackets

## B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed	Rotational speed	Control rod travel	
1	2	3	4	5	6	7	8	9
	min. 12,5	250		7	11,8-12,0	2200	12	100 min. 20,3
13-17	max. 12,0	300		8	7,2-7,6	2500	13	1800 12,2-12,4
	6,9-7,1	375	50	9	-	-	14	1000 12,7-12,8
	**	400		10	0-1,0	2950		
	-	-		11				
	2,5	720-820					6	Switching point

## C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation		Variations in fuel delivery		Starting fuel delivery Idle		Difference
Test oil temp. 40°C (104°F)								
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	6	7	8	
2200	33,0-35,0 (32,0-36,0)	2500* RW 7,2-7,6	1800	33,0-35,0 (32,0-36,0)	100	min. 55,0	6,0	12a
			1000	32,0-33,0 (31,0-35,0)	375	6,5-7,5 (5,5-9,0)	1,0	
					2500	13,0-17,0 (12,0-18,0)	2,5 3,0	15 siehe Pkt. 8a 16

Checking values in brackets

ca. 3,5 mm less than in Column 2

MB 3.0

1. \*\* Position the idle-speed auxiliary spring at  $n = 385 \text{ min}^{-1}$  so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:  
At  $1000 \text{ min}^{-1}$ , control-rod travel 1.9 - 2.0 mm.
3. Testing the idle-speed auxiliary spring shutoff  
Control-lever position  $47^\circ$ . No change in control-rod travel after switching point up to  $550 \text{ min}^{-1}$ .  
Control-lever position  $30^\circ$ . Rotational-speed range  $350 \text{ min}^{-1}$  -  $450 \text{ min}^{-1}$ .
4. Testing the pneumatic shutoff box  
Control lever against idle stop.  
At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4 j

3. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 120 RS 106

RSV 350 - 1500 MOB 128

Komb.-Nr. 0 400 064 033

Sales model

0 400 064 035

1-3-4-2-0-90-180-270  $\pm$  0,5(0,75)

supersedes 4.80

company Daimler-Benz

engine OM 616

38 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80  
(1,65-1,85) mm (from BDC) RW = 18,5-21,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 5
1500	12,8+0,1	3,7-3,8	0,25(0,3)			
350	6,8-7,0	0,6-0,8	0,1(0,15)			
1000	13,7-13,9		0,25(0,3)			
600	14,0-14,2		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4			Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
loose	800	0,3-1,0				ca. 18	350	6,4	1500	12,8-12,9
ca. 53	1550-1570 = 11,9 1650-1680 = 4,0 1850 = 0,3-1,7						350 100 900 770-830	6,8-7,0 min. 20,3 max. 1,5 2,5	1000 600	13,7-13,9 14,0-14,2

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	mm 9
1500	37,0-38,0 (36,0-39,0)	1550-1570*	1000 600	37,5-39,5 (36,5-40,5) 38,0-40,0 (37,0-41,0)		100 350	min. 53,0 6,0-8,0 (5,5-8,5)	350	6,9

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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J7

J7

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4 K

3. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 106

RSV 350...1750 M08 129

Komb.-Nr. 0 400 064 034

1-3-4-2=0-90-180-270  $\pm 0,5(0,75)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 4.80

company Daimler-Benz

engine OM 616

44 kW

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,70-1,80$  mm (from BDCRW  $18,5-21,5$ )  
( $1,65-1,85$ )

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning torque control valve mm 6
1730	13,1+0,1	3,85-3,95	0,25(0,3)			
350	6,8-7,0	0,6-0,8	0,1(0,15)			
1100	13,7-13,9		0,25(0,3)			
600	14,1-14,2		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 18	350	6,4	1730	13,1-13,2
							100	min. 20,3	1100	13,7-13,9
							900	max. 1,5	600	14,1-14,3
ca. 56							350	6,8-7,0		
2a							770-830	2,0		
		1760-1780 = 12,2								
		1885-1915 = 4,0								
		1970 = 0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1730	38,5-39,5 (37,5-40,5)	1760-1780*		1100	37,5-39,5 (36,5-40,5)	100	min. 53,0	350	6,9
				600	38,0-40,0 (37,0-41,0)	350	6,0-8,0 (5,5-8,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WP 001/4 MB 2,4 K 2

1. Edition

En

Testoil SO 4113

PES 4 M 55 C 320 RS 106 RSV 400-2200 MOB 351  
Komb.-Nr. 0 400 074 081  
Sales model 0 400 074 082  
1-3-4-2 = 0-90-180-270  $\pm$  0,50 (0,75)

superseded by  
company Daimler-Benz  
OM 616  
engine 53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 mm (from BCCRW = 20,0 mm)  
(1,65-1,85)

Rotational speed rev./min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
	2	3	4	2	3	6
2180	12,9+0,1	4,0-4,1	0,2(0,3)			
400	6,4-6,6	0,6-0,8	0,1(0,15)			
1000	13,4-13,5		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev./min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev./min				Control lever deflection in degrees	rev./min	Control rod travel mm	rev./min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 39	400	6,5	1000	13,4-13,5
									1750	13,1-13,4
ca. 70	2240-2250 = 12,0 2370-2390 = 4,0 2550 = 0,3-1,7						Set auxiliary idle control-rod travel		spring at 2,0 mm	
2a										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to 1 rev./min				Idle			
rev./min	cm <sup>3</sup> /1000 strokes			rev./min	cm <sup>3</sup> /1000 strokes	rev./min	cm <sup>3</sup> /1000 strokes	rev./min	Control rod travel mm
1	2	3		4	5	6	7	8	9
2180	40,0-41,0 (39,0-42,0)	2240-2250*		1000	37,0-38,0 (36,0-39,0)	100	min. 53		
						400	6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps and Governors

SWPP 001/4 MB 2,4 m 1

2. Edition

En

40

PES 4 M 55 C 320 RS 107 - 1

RSF 375/2250 M 17

Komb. Nr. 0 400 074 956      Sales model 0 400 074 957

1 - 3 - 4 - 2

0 - 90-180-270

supersede 5.83

company: Daimler Benz

company OM 616

engine 53 kW (72 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke	2,20-2,30 (2,15-2,35)	mm (from RDC)	18,5-21,5	Control rod travel
---------------------------	--------------------------	---------------	-----------	--------------------

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm/100 strokes	cm/100 strokes	mm	cm/100 strokes	mm
1	2	3	4	2	3	6
1000	13,9 <sup>+0,1</sup>	3,9-4,0	0,25(0,3)			
375	6,5-6,7	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

(checking values in brackets)

## B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel			
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
	mm	rev./min		mm	rev./min		rev./min	mm	
1	2	3	4	5	6	7	8	9	
9-13	① min. 11,5	250	50	⑦ 13,0-13,2	2200		⑫ 100	min. 20,3	
	② max. 11,0	300		⑧ 8,7-9,1	2500		⑬		
	③ 6,5-6,7	375		⑨ -	-		⑭ 1800	13,3-13,5	
	④ **	400		⑩ 0-1,0	2950		1000	13,9-14,0	
	⑤ -	-		⑪ -	-		⑥ Switching point		
	2,5	720 - 820							

### C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery (19)		Full load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery (18)		Difference (12a)
Test oil temp. 40 C (104 F)							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,7-9,1	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (12a)
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 1,5 (15)
					2500	23,0-27,0 (22,0-28,0)	2,5 3,0 See Point 8 a (16)

### Checking values in brackets

\*ca. 4.2 less control rod travel than in Column 2

1.84

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J10



1. \*\* Position the idle-speed auxiliary spring at  $n = 385 \text{ min}^{-1}$  so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:  
At  $1000 \text{ min}^{-1}$ , control-rod travel 1.9 - 2.0 mm.
3. Testing the idle-speed auxiliary spring shutoff  
Control-lever position  $47^\circ$ . No change in control-rod travel after switching point up to  $550 \text{ min}^{-1}$ .  
Control-lever position  $30^\circ$ . Rotational-speed range  $350 \text{ min}^{-1}$  -  $450 \text{ min}^{-1}$ .
4. Testing the pneumatic shutoff box  
Control lever against idle stop.  
At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

65 kW (88 PS)

18,5-21,5 <sup>Controlled travel</sup>

(Checking values in brackets)

Ca. 4.0 less control rod travel than in Column 2

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MB 3.0

1. \*\* Position the idle-speed auxiliary spring at  $n = 385 \text{ min}^{-1}$  so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:  
At  $1000 \text{ min}^{-1}$ , control-rod travel 1.9 - 2.0 mm.
3. Testing the idle-speed auxiliary spring shutoff  
Control-lever position  $47^{\circ}$ . No change in control-rod travel after switching point up to  $550 \text{ min}^{-1}$ .  
Control-lever position  $30^{\circ}$ . Rotational-speed range  $350 \text{ min}^{-1}$  -  $450 \text{ min}^{-1}$ .
4. Testing the pneumatic shutoff box  
Control lever against idle stop.  
At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,0 V 1  
1. Edition

En

PES 5 M 55 C 320 RS 109

RSV 350-1650 MOB 350-1

supersedes Daimler-Benz  
company OM 617  
engine 57 kW

Komb.-Nr. 0400 075 003

Sales model 0 400 075 004

1-2-4-5-3=0-72-144-216-288  $\pm 0,50$  (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,20-2,30$  mm (from BDC)  $RW = 20,0$  mm  
( $2,15-2,35$ )

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1530	13,5 $\pm$ 0,1	4,0-4,1	0,2 (0,3)			
350	6,2-6,5	0,6-0,8	0,1 (0,15)			
750	14,0 $\pm$ 0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 40	350	6,2-6,5	750	14,0-14,1
									1300	13,6-13,9
*ca. 75°	1670-1680=12,5 1780-1800= 4,0 2000= 0,3-1,7		Set auxiliary idle spring at 2.0 mm control-rod travel.							

The numbers denote the sequence of the tests. \*Adjustment angle = 0° = horizontal control lever position.

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Fuel load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery		5 4a Idle stop	
Test on temp 40 C/104 F		Note changed to							
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1630	40,0-41,0 (39,0-42,0)	1670-1680*		750	39,0-41,0 (38,0-42,0)	100	min. 53,0		
						350	6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,0 v 2

1. Edition

En

PES 5 M 55 C 320 RS 109 RSV 400-2200 MOB 352

Komb.-Nr. 0 400 075 001

Sales model 0 400 075 002

superseded by Daimler-Benz  
company OM 617  
engine 65 kW

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288  $\pm$  0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,20-2,30$   
 $(2,15-2,35)$  mm from BD  $FW=20,0$  mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm/100 strokes	Difference cm/100 strokes	Control rod travel mm	Fuel delivery cm/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
2180	13,2 $\pm$ 0,1	4,1-4,2	0,2(0,3)			
400	6,2-6,4	0,6-0,8	0,1(0,15)			
1000	13,9 $\pm$ 0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
100%	800	0,3-1,0				ca. 39	400	6,3	1000	13,9-14,0
									1500	13,5-13,8
* ca. 70	2240-2250 = 12,2 2400-2420 = 4,0 2550 = 0,3-1,7		Set auxiliary idle spring at 2.0 mm control-rod travel.							
2a										

\* Adjustment angle = 0° = horizontal control lever position.  
The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40 C/104 F		Note changed to rev/min		rev/min	cm/100 strokes	rev/min	cm/100 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
2180	41,0-42,0 (40,0-43,0)	2240-2250*	1000	39,0-41,0 (38,0-42,0)	100	min. 53			
					400	6,0-8,0 (5,5-9,0)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
1.84

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J15

045

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,0 v 3

1. Edition

En

PES 5 M 55 C 320 RS 109-1 RSV 400-2200 MOB 352

Komb.-nr. 0 400 075 005  
Sales model 0 400 075 006

supersedes  
company Daimler-Benz  
OM 617  
engine 65 kW

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288  $\pm$  0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,20-2,30}{(2,15-2,35)}$  mm (from BDC) RW = 20,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
2180	13,2 $\pm$ 0,1	4,1-4,2	0,2(0,3)			
400	6,2-6,4	0,6-0,8	0,1(0,15)			
1000	13,9 $\pm$ 0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.39	400	6,3	1000	13,9-14,0
									1500	13,5-13,8
* ca.70	2240-2250 = 12,2 2400-2420 = 4,0 2550 = 0,3-1,7		Set auxiliary idle spring at 2.0 mm control-rod travel.							
(2a)										

The numbers denote the sequence of the \*Adjustment angle = 0° = horizontal control lever position.

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limiter		3a Fuel delivery character stops		Starting fuel delivery 5		4a Idle stop	
Test temp. 40 C/104 F		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9	
1	2								
2180	41,0-42,0 (40,0-43,0)	2240-2250*	1000	39,0-41,0 (38,0-42,0)	100	min. 53			
					400	6,0-8,0 (5,5-9,0)			

Checking values in brackets

\* 1 mm less control rod travel than 2

1.84

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,0 V

1. Edition

En

Test bench 4113

PES 5 M 55 C 320 RS 109-1

RSV 350-1650 MOB 350-1

supersedes -

Komb.-nr. 0 400 075 007

company Daimler-Benz

Sales model 0 400 075 008

OM 617

engine 57 kW

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288  $\pm$  0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,20-2,30}{(2,15-2,35)}$  mm from BDC RW = 20,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm/100 strokes	Difference cm/100 strokes	Control rod travel mm	Fuel delivery cm/100 strokes	Spring pretensioning (torque control valve) mm
1	2	3	4	5	6	7
1630	13,5 $\pm$ 0,1	4,0-4,1	0,2(0,3)			
350	6,2-6,5	0,6-0,8	0,1(0,15)			
750	14,0 $\pm$ 0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 40	350	6,2-6,5	750	14,0-14,1
									1300	13,6-13,9
ca. 75°	1670-1680 = 12,5 1780-1800 = 4,0 2000 = 0,3-1,7		Set auxiliary idle spring at 2.0 mm control rod travel							
2a										

The numbers denote the sequence of the tests \* Adjustment angle = 0° = horizontal control lever position.

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed min		3a Fuel delivery characterstics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm/1000 strokes	3		rev/min	cm/1000 strokes	rev/min	cm/1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1630	40,0-41,0 (39,0-42,0)	1670-1680*	750	39,0-41,0 (38,0-42,0)		100	min. 53,0		
						350	6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.34

**BOSCH**

Geschäftsbereich KM Kundendienst Kfz Ausrüstung  
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J17

J17

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 6,0 e

3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004  
0 403 476 011

RSV 325-1250 MW/308

superseded 5.83  
company Volvo/Penta  
TD 60 D  
engine 118 kW (160 PS)

1- 5- 3 - 6 - 2 - 4  
0-60-120-180-240-300  $\pm$  0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\frac{2,80-2,90}{(2,75-2,95)}$  mm (from BDCRW 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1000	10,5+0,1	8,95-9,15	0,35(0,6)			
325	4,3-4,5	1,0 - 1,3	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees 7			③ Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9			
loose	800	0,3-1,0				ca. 26	325	3,9	350	11,1+0,1
	x = 4,0						325	4,3-4,5	500	10,7-0,1
ca. 49	1290-1330 = 9,6						450-510 = 2,0		1250	10,5+0,1
②a	1335-1365 = 4,0									
	1450 = 0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational speed limit Note changed to 1 rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		④a Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
1000	89,5-91,5 (87,5-93,5)	1290-1300*				100	min. 140	325	4,4
						325	10,0-13,0 (7,5-15,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 Vol. 6,0 p  
3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004  
RSV 650-750 MW 4/311-1  
0 403 476 009

supersede 5.82  
company Volvo  
engine TD 60 B 6  
84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 2,80-2,90 \\ (2,75-2,95) \end{matrix}$  mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	10,9+0,1	8,1-8,3	0,35 (0,6)			
650	5,0-5,1	1,7-2,1	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 34	650	4,5	375	11,9+0,6
	X =						650	5,0-5,1	470	10,9+0,1
ca. 40	750-760 = 9,9						690-750 = 2,0			
2a	760-790 = 4,0									
	930 = 0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		5 4a idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	3		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
700	81,0-83,0 (79,0-85,0)	750-760 *							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 PEN 6,0 r 4

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004 RSV 650-750 MW 4/311-3

0 403 476 019

supersedes -

company Volvo-Penta

engine TD 60 DG

86 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,80-2,90$  mm from BDC RW =  $9,0-12,0$  mm  
( $2,75-2,95$ )

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	9,3-9,5	0,35 (0,6)			
650	4,5-4,6	1,7-2,1	0,35 (0,55)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3									
loose	800	0,3-1,0				ca. 34	650	4,0	375	11,9-12,5
							650	4,5-4,6	470	11,3-11,4
ca. 40	750-760 = 10,3 760-790 = 4,0 930 = 0,3- 1,7						690-750 = 2,0			
2a										

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to ) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 4a Idle stop Control rod travel mm 9	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7		rev/min 8	
700	93,0-95,0 (91,0-97,0)	750-760*							

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 PER 8,8 a 1

6. Edition

En

Testoil-ISO 4113

PES 8 MW 100/320 RS 1011  
ROV 375... 1300 MW 18-1  
Komb.-Nr. 0 403 448 102

supersedes 5.82  
company Perkins  
engine AV 8.540  
138 kW

Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,50-2,60$  mm (from BDC) bei RW =  $9,0-12,0$  mm  
( $2,45-2,65$ )

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	10,1+0,1	9,2-9,4	0,3 (0,6)			
375	5,0-5,1	1,05-1,45	0,3 (0,55)			
800	10,1+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1300	15,2-17,8	30-50	700	4,7	ca. 11	100	min. 6,5	1390-1410	8,7
	1600	0,0- 1,0		450	8,3		375	4,9-5,0	515-575	2,6
ca. 64	9,1 4,0	1365-1375 1425-1455				3a	470-530=2,0		375	1,2-1,3

Torque control travel a =                  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	92,0-94,0 (90,0-96,0)	1365-1375*	800	87,0-91,0 (85,0-93,0)	100	min. 140 (19 - 21 RW)		
					375	10,5-14,5 ( 8,0-17,0)		

Checking values in brackets:

\* 1 mm less control rod travel than col. 2  
1.84

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Port closing and TDC markings

Comb.-No.	<sup>0</sup> camshaft between port-closing and TDC	at control-rod travel 21 mm (Start)
... 102	at control-rod travel 10,5 mm 17°	11°

# Test Specifications Fuel Injection Pumps ① and Governors

WPD 001/4 RVI 8,8k  
6. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 PS 1016  
ROV 300-1300 MW 25  
Komb.-Nr. 0 403 446 123

supersees 1.83  
company RVI  
engine MIDR06.02-12  
125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Port-closing mark 10,5  
after port closing.

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,00-3,10  
(2,95-3,15) mm (from BDC) RW = 9,0 - 12,0

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,1+0,1	8,95-9,15	0,35 (0,6)			
300	5,7-5,8	0,95-1,35	0,35 (0,55)			
900	11,1+0,1		0,5 (0,7)			
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1300 1650	15,2-17,8 0 - 1,0				ca. 13	200 300	max. 7,5 5,8-5,9		
ca. 62	10,1 3,9	1355-1365 1485-1515				340-600				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b rev/min ④a	Fuel delivery characteristics high idle speed ⑤a rev/min ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤ Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	rev/min	cm <sup>3</sup> /1000 strokes	8	9
LDA 1300	0,67 bar 89,5-91,5 (87,5-93,5)	1355-1365*	LDA 900	0,67 bar 85,0-89,0 (83,0-91,0)	100 300	95,0-105,0 9,5-13,5 (7,0-16,0)		
			LDA 500	0 bar 56,0-58,0 (54,0-60,0)	100-230 (80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2  
1.84

## D. Adjustment Test for Manifold Pressure Compensator

Test article	rev/min	Decreasing pressure - in bar gauge pressure		Control rod travel	Elimination difference
		Setting	Measurement		
Pump pressure		Gauge pressure	bar Gauge pressure	bar mm	
RS 1016 - MW 25	500	0,23	0,67 0 0,20	10,7-10,9 11,1-11,2 9,8-9,9 10,2-10,3	

### Notes

(1) when 0

rev/min and  
gauge pressure

bar (1) maximum full-load control rod travel

# Test Specifications Fuel Injection Pumps and Governors

**Testoil-ISO 4113**

PE 6 MW 100/720 LS 1017 RO 300/1250 MW 26

0 403 546 003

1 - 6 - 5 - 4 - 3 - 2

0 -75 -120-195-240-315  $\pm 0,50$  (0,75)

supersedes 11.82

company KHD

engine F6L413FX

150 kW (205 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,10-3,20$  mm (from BDC) RW = 9,0 - 12 mm  
(3,05-3,25)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,9+0,1	11,1-11,3	0,5(0,6)			
350	8,2-8,4	1,25-1,65	0,35(0,55)			
700	12,7+0,1		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Test specifications rev/min 6		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,6	1295-1310	300	8,3	100	min.9,9	700	12,7-12,8
				4,0	1345-1375			350	8,2-8,4	850	12,4-12,5
1450	0,0-1,0							380-440	= 2,0	1100	11,9-12,0

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes / mm 7	
1250	111,0-113,0 (109,0-115,0)			700	109,5-113,5 (107,5-115,5)	100	126,5-136,5 (123,5-139,5)
						350	12,5-16,5 (10,0-19,0)
						100-270	(80-300)

Checking values in brackets

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 RVI 5,5 a

2. Edition

En

Testoil-ISO 4113

PES 6 MW 80/320 RS 1104  
RSV 300-1450 MW 2/801  
0 403 476 013

supersedes 5.83  
RVI  
company  
engine MD 060212  
97,8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $1,75-1,85$   
( $1,70-1,90$ ) mm (from BDC) RW =  $9,0-12,0$  mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
900	10,4-10,5	5,05-5,25	0,25(0,4)			
300	4,7-4,9	0,85-1,15	0,2(0,35)			
1450	9,4-9,5		0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 20	300	4,8	900	10,4-10,5
	x =	4,0					250	max. 8,4	1450	9,4-9,5
ca. 58	8,4	1515-1525							1150	9,6-9,8
2a	3,9	1555-1585								
	0-1,0	1650								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to				Idle			
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5		6	7	8	9
900	50,5-52,5 (49,5-53,5)	1515-1525*	1450	54,0-56,0 (52,0-58,0)		100	max. 15 mm RW 75,0-85,0 (70,0-90,0)		
						300	8,5-11,5 (7,0-13,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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K2

K2



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6 a

3. Edition

E.1

Testoil-ISO 4113

PES 6 MW 100/320 RS 1504

RSV 350 ... 1250 MW 2/305 R DHK 1 688 901 016

0 403 476 004

207 + 3 bar

supersedes 3.80

company IHC

engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 mm (from BDC) / 10,5 mm RW  
(3,15-3,35)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1250	7,3 +0,2	6,9 - 7,1	0,3 (0,5)			
350	5,5 - 5,7	1,8 - 2,2	0,3 (0,5)			
1000			0,3 (0,5)			
800			0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm 10 11	
	Control rod travel mm 2	Control rod travel mm/rev/min 3					rev/min 8	Control rod travel mm 9		
Loose	800	0,3-1,0				ca. 32	350	5,6	1100	7,3-7,5
							100	min. 19	1000	7,8-8,0
ca. 60	1300-1310=6,4						350	5,5-5,7	800	8,5-8,7
2a	1360-1390=3,1						430-490	= 2,0	500	8,6-8,8
	1450= 0,3=1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40 °C (104 °F) rev/min cm <sup>3</sup> /1000 strokes 1 2		6 Rotational speed limit Note: Changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min cm <sup>3</sup> /1000 strokes 4 5		Starting fuel delivery Idle rev/min cm <sup>3</sup> /1000 strokes 6 7		5 4a Idle stop rev/min Control rod travel mm 8 9	
1250	69,0-71,0 (68,0-72,0)	1300-1310*	1000	76,0-78,0 (75,0-79,0) 82,5-84,5 (81,5-85,5)	800	100 350 1375	min. 140 18,0-22,0 (17,0-23,0) 25,0-37,0 (24,0-38,0)	350	5,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 IHC 7,6b

3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1504  
RSV 350 ... 1200 MW 2/306 R  
0 403 476 005

DHK 1688 901016  
207 + 3 bar

supersedes 3.80  
company IHC  
engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $3,20-3,30$  mm (from BDC) bei 10,5 mm RW  
(3,15-3,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1200	7,4±0,2	6,5-6,7	0,3 (0,5)			
350	5,7-5,9	1,8-2,2	0,3 (0,5)			
1000			0,3 (0,5)			
800			0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in  

## B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm/rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 = 0,3-1,0					ca. 32	350	5,8	1100	7,5-7,7
ca. 60	1250-1260=6,5						100	min. 19	1000	8,1-8,3
	1310-1340=3,1						350	5,7-5,9	800	8,6-8,8
	1450 = 0,3-1,7						430-490 = 2,0		500	8,7-8,9

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min	cm <sup>3</sup> /1000 strokes			rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1200	65,0-67,0 (64,0-68,0)	1250-1260*		1000	72,0-74,0 (71,0-75,0)	100	min. 140	350	5,8
				800	78,0-80,0 (77,0-81,0)	350	18,0-22,0 (17,0-23,0)		
						1325	24,0-36,0 (23,0-37,0)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

1.84

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K4

K4

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 39,8 b

2. Edition

En

Testoil-ISO 4113

(1) PE 6 P 120 A 300/3 LS 267

(2) PE 6 P 120 A 320 LS 268 RSUV 300-750 P 9 A 332/1 R

(3) PE 6 P 120 A 300 LS 330

supersedes 1.82

company Südbremse

engine D/TD/TBD 602 V 12

TBD 602 V 12 S

1 - 5 - 3 - 4 - 2 - 6 (1) / 1 - 6 - 2 - 4 - 3 - 5 (2 u. 3)  
0 -15 -120-135-240-255  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ ) / 0 -15 -120-135-240-255  $\pm 0,5^\circ$  ( $\pm 0,75^\circ$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 806 046 (1)

0 401 876 214 (2)

0 401 816 052 (3)

## A. Fuel Injection Pump Settings

Port closing at prestroke

2,3 - 2,4

(2,25-2,45)

mm (from BDC) bei RW = 21.0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,0+0,1	26,0 - 26,4 (25,7 - 26,7)	0,5 (0,9)			
300	5,5-5,7	2,6 - 3,2	0,8 (1,2)			

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca.29	300	5,1	700	13,0+0,1
	X =	5,25					100		325	14,2+0,6
							300	5,5-5,7	450	13,0+0,1
ca.70	12,0	790 - 800					315-375	5=2,0 mm		
⑤	4,0	815 - 845								
	980	0,3 - 1,7								

The numbers denote the sequence of the tests

without (1), (3) and

## C. Settings for Fuel Injection Pump with Fitted Governor

(2)

② Full-load stop		⑥ Rotational-speed limitat		③a Fuel delivery characteristics		Starting fuel delivery		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to rev/min				Idle XXXX XXXXXXX		Control rod travel mm	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	mm
1	2	3	4	5	6	7	8	9	
					100	19,5-21,0			

The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps (1) and (2) or (1) and (3) operate in tandem.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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K5

K5

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MM 19,9 b

3. Edition

En

Testoil-ISO 4113

- (1) PE6P 120 A 320 RS 353 RSUV 300-750 P 9 A 333/1 R  
(2) PE6P 120 A 300/3 RS 342  
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

supersedes 8.82  
company MWM - Südbremse  
engine D/TD/TBD 601-6  
601-6 S

Komb.-Nr. 0 401 876 215 (1)  
0 401 816 053 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $2,3-2,4$  mm (from BDC)  $19,5 - 22,5$  mm  
(2,25-2,45)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
700	13,0+0,1	26,0 - 26,4 (25,7 - 26,7)	0,5 - (0,9)			
300	5,5-5,7	2,6 - 3,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

(1)

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,1	700	13,0-13,1
	x = 5,25						100		450	13,0-13,1
							300	5,5-5,7	325	14,2-14,8
ca.70	12,0=790-800						2,0=	315-375		
⑤	4,0=815-845									
	980 = 0,3-1,7									

The numbers denote the sequence of the tests

without (2) and

## C. Settings for Fuel Injection Pump with Fitted Governor

(1)

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a idle stop	
Test oil temp. 40°C (104°F)		Note: changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.						100	19,5-21,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.83

K6

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ALO 13,8 b

1. Edition

PES 6 P 120 A 320 RS 354 RQV 375-1050 PA 314 KR  
Komb.-Nr. 0 402 046 159

Values only apply to test nozzle-and-holder  
assembly 0 681 443 022 and fuel-injection test  
tubing 1 680 750 026.

supersedes

company Allis Chalmers  
engine 6138 I

A.C.-Nr. 743 96 184

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,8-2,9  
(2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	26,4-27,1	1,0			
600	6,0	8,6-9,8	1,0			
600	12,0	26,3-28,2	1,0			
600	15,0	33,8-36,2	1,0			
200	6,0	4,2-5,2	1,0			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 66	1050 1100 1150 1210 1300	15,0-18,0 10,7-15,0 6,0-11,6 0-7,0 0	-	-	-	ca. 10	250 350 450 550	6,4-8,0 3,0-5,2 1,3-2,8 0	-	-

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery ⑥ idle switching point		Torque-control ⑤ travel Control rod travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
1050	210,0-216,0 (208,0-218,0)	1060-1080*	900	210,0-216,0 (207,0-219,0)	100	130,0-170,0		
			700	238,0-244,0 (235,0-247,0)	300	19,0-25,0		

Checking values in brackets

\* 1mm less control rod travel than col. 2  
0,1 12.83

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Testoil-30 4113

K7

47

# Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 DEE 10,1 a 2  
1. Edition

40

En

PES 6 P 110 A 720 RS 370 RSV 500-900 P0/448 DR  
Komb.-Nr. 0 402 076 048

supersedes  
company John Deere  
engine 6619 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,85)  
(2,70-2,90) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
900	10,6+0,1	12,3-12,5	0,4			
500	6,4-6,6	1,9-2,3				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min 10 11	
	Control rod travel mm 2	Control rod travel mm rev/min 3								
loose	800	0,3-1,0	-	-	-	ca. 26	500	6,4	900	0
ca. 42	1000	6,4					100	19,0-21,0	650	0,7
2a							500	6,4		
							660-720	= 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min 8		4a Control rod travel mm 9	
	cm <sup>3</sup> /1000 strokes 2				cm <sup>3</sup> /1000 strokes 5		cm <sup>3</sup> /1000 strokes 7				
900	123,0-125,0 (120,0-128,0)	945-955*		650	138,5-141,5 (135,5-143,5)		100	180,0-200,0	500	6,4	
							High idle speed 1000	47,0-57,0			
							Low idle speed 500	19,0-23,0			

Checking values in brackets

\* = mm less control rod travel than col. 2

2.84

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# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 17,4 b 8

1. Edition

En

PE 10 P 120 A 520/5 LS 850 RQV 250-1150 PA 670-2

supersedes

companion

MAN engine D 2540 MLE 405 kW

Komb.-Nr. 0 401 849 179

1-8-7-6-3-5-2-10-9-4  
0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)  
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.  
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC)

Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,2+0,1	18,5 - 18,7	0,5 (0,9)			
250	6,2-6,4	1,2-1,8	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1210	15,2-17,8	-	-	-	ca. 12	100	min. 7,8	300	1,7-2,0
ca. 63	10,2	1190-1200					250	6,2-6,4	800	5,6-5,9
	4,0	1210-1240					375-435	= 2,0	1150	7,8
	1400	0 - 1,0								

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	1.0 bar 185,0-187,0 (182,0-190,0)	1190-1200 *	LDA 500	0 bar 119,0-121,0 (116,0-124,0)	100	205,0-225,0 (201,0-229,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2  
12.83

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# D. Adjustment Test for Manifold Pressure Compensator

MAN 17,4 b 8

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump/governor	Setting	Measurement		Control rod travel	Elimination difference
	Gauge pressure =	bar	Gauge pressure =	bar mm	(1)
PE 10P.. LS 850 + RQV.. PA 670-2	1,0		0		11,2-11,3
			0,65		9,6-9,7
			0,54		10,8-10,9
					10,1-10,3

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)



# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 8,0 h

5. Edition

En

PE 6 P 110 A 720 RS 3034 RQV 200-1200 PA 529

Komb.-Nr. 0 401 846 732

supersedes 6.83

company Scania

engine DSI 801

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pressure  $3,3 - 3,4$  mm (from BDC) = RW 9,0 - 12,0 mm  
(3,25-3,45)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,2+0,1	12,9 - 13,1	0,5(0,7)			2,5 ± 0,1
225	5,5-5,7	1,2 - 1,6	0,2(0,4)			(2,2 - 2,9) **

Adjust the fuel delivery from each outlet according to the values in

\*\* In case valve-spring spread is higher, change the initial tension accordingly.

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 14	100	min. 7,0	150	0,5-0,8
ca. 64	12,2	1240-1250					225	5,5-5,7	500	3,7-4,3
	4,0	1395-1425							850	6,2-6,4
	1550	0 - 1,0					390-450 = 2,0		1200	8,6
						3a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 129,0-131,0 (127,0-133,0)	1240 - 1250*	LDA 1200	0,9 bar 134,5-137,5 (132,0-140,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 79,0-83,0 (77,0-85,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

Testoil-ISO 4113

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YAA

K11

# D. Adjustment Test for Manifold Pressure Compensator

SCA 8,0 h

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE 6 P..RS 3034 + RQV..PA 529	0,90		13,2 - 13,3	
		0	11,3 - 11,4	
		0,44	12,7 - 12,8	
		0,29	11,7 - 11,9	

Notes

(1) when n =

rev/min and  
gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MWM 39,8 c

2. Edition

En

**Testoil-ISO 4113**

- (1) PE 6 P 130 A 300 LS 3051  
(2) PE 6 P 130 A 320 LS 3052  
(3) PE 6 P 130 A 300 LS 3052

RSUV 300-750 P 9 A 332/1 R

supersedes 1.82

company **MWM - Südbremse**engine **TBD 602-V 12 K**

1 - 5 - 3 - 4 - 2 - 6 (1) 1 - 6 - 2 - 4 - 3 - 5 (2 u. 3)  
0 -15 -120-135-240-255° ± 0,5° (± 0,75°) 0 -15 -120-135-240-255° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Komb.-Nr. 0 401 816 703 (1)

0 401 876 711 (2)

0 401 816 705 (3)

Port closing at prestroke

2,8 - 2,9  
(2,75-2,95)

mm (from 80 bei RW = 21,0 mm / 0 401 816 705 (3)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,0+0,1	34,7 - 35,1 (34,4 - 35,4)	0,5 (0,9)			
300	5,3-5,5	4,8 - 5,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	300	0,3 - 1,0	-	-	-	ca.29	300	4,9	700	12,0+0,1
	X =	5,25					300	5,3-5,5	325	13,2+0,6
							300	5,3-5,5	450	12,0+0,1
							325-385=2,0mm			
ca.70 ⑤	11,0	790 - 800								
	4,0	815 - 845								
	980	0,3 - 1,7								

The numbers denote the sequence of the tests

without (1), (3) and

## C. Settings for Fuel Injection Pump with Fitted Governor

(2)

② Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle XXXX		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet. Pumps (1) and (2) or (1) and (3) operate in tandem.						100	19,5-21,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.83

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# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MWM 19,9 c  
3. Edition

En

Testoil-ISO 4113

- (1) PE 6 P 130 A 320 RS 3057 RSUV 300-750 P 9 A 333/1R  
(2) PE 6 P 130 A 300 RS 3056

supersede 8.82  
company MWM - Südbremse  
engine TBD 601-6 K

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 876 712 (1)

0 401 816 704 (2)

## A. Fuel Injection Pump Settings

Port closing at prestroke (2,8-2,9) mm (from BDC) bei RW = 21,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,0+0,1	34,7 - 35,1 (34,4 - 35,4)	0,5 - (0,9)			
300	5,3-5,5	4,8 - 5,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 28	300	4,9	700	12,0+0,1
	x = 4,75						300	5,3-5,5	325	13,2+0,6
									450	12,0+0,1
ca. 66	11,0	790-800								
⑤	4,0	815-845								
	980	0,3-1,7								

The numbers denote the sequence of the tests

without (2) and

## C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	mm RW	8	9
					100		19,5-21,0		
The full-load delivery is adjusted on the engine in accordance with the engine inspection sheet.									

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

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K14

K14

# Test Specifications Fuel Injection Pumps ② and Governors

PE 8 P 110 A 320 LS 3802-1 RQ 300/1150 PA 187-11

Komb.-Nr. 0 401 848 751

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$ 

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

superseded 9.83

company Daimler-Benz

engine OM 422

206 kW

Testoil-ISO 4113

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC)  $3,95 - 4,15$  mm (from BDC)  $1. 8; RW = 9,0 - 12,0$  mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	13,1-13,3	0,4(0,75)	12,3+0,1	13,1-13,3	
300	8,5-8,7	1,5- 2,1	0,45(0,75)	8,5-8,7	1,5-2,1	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, -Sp. 4 u. 5	
	* with return throttle (1)			* without return throttle (2)		

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,0-14,0	650	13,5	11,3	1195-1210	300	8,6	100	min. 10,0	-	-
				4,0	1235-1265			300	8,5-8,7		
				1350	0-1,5			430-470	= 2,0		
								500	max. 1,8		

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation: At

1195-1210 min<sup>-1</sup>1 mm less control  
rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3		rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/mm 7
(1) 1150	131,0-133,0 (128,5-135,5)	600		600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

12.83

## B. Governor Settings

MB 14,6 e 1

- 2 -

(2)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
PRG check		(1) Setting point	Test specifications (4)			(5) Setting point	Test specifications (5)			(3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
650	13,0-14,0	650	13,5	11,3	1195-1210	300	8,6	100	min. 10,0	-	-
				4,0	1235-1265			300	8,5-8,7		
				1350	0 - 1,5			430-470	= 2,0		
								500	max. 1,8		

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation 1195-1210 min<sup>-1</sup>

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever		(2) Control rod stop	(3a) Fuel delivery characteristics	(3b) Starting fuel delivery	(6) Control rod travel
Test oil temp 40°C (104°F)				Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min
1	2	3	4	5	6
(2)		600			100
1150	131,0-133,0 (128,5-135,5)		600	112,0-116,0 (109,0-119,0)	130,0-150,0 (126,0-154,0)

Checking values in brackets

## B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control							
PRG check		①	Setting point		Test specifications		④	Setting point		Test specifications		⑤	Setting point		Test specifications		③
rev/min	Control rod travel mm		rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	
1	2		3	4	5	6		7	8	9	10			11	12		

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever		(2) Control rod stop	(3a) Fuel delivery characteristics	(3b) Starting fuel delivery	(6) Control rod travel
Test oil temp 40°C (104°F)				Idle speed	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min
1	2	3	4	5	6

En Checking values in brackets

K46

K16

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6c1  
2. Edition

En

PE 8 P 110 A 320 LS 3802-1 RNV 300-1150 PA 524-9  
Komb.-Nr. 0 401 848 752  
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$   
See Service Information VDT-I-401/102

superseded 9.83  
company Daimler-Benz  
engine OM 422  
206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $4,0 - 4,1$  mm (from BDC)  $Z_{v1} = 8$ ;  $P_{M1} = 9,0 - 12,0$  mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery * cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	13,1-13,3	0,4(0,75)	12,3+0,1	13,1-13,3	
300	8,0-8,2	1,5- 2,1	0,45(0,75)	8,0-8,2	1,5-2,1	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, Sp. 4 u.5	
* with return throttle (1)				* without return throttle (1)		

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 21	100	min. 9,7	250	1,0-1,2
ca. 66	11,3 4,0	1190-1200 1235-1265				330-465 (3a)	300	8,0-8,2	550 850 1150	3,4-3,7 4,9-5,3 7,6

Torque control travel a = - mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150 (1)	131,0-133,0 (128,5- 135,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

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- 2

Torque control travel a =                      -                      mm

**Testoil-ISO 4113**

### Checking values in brackets

- 1 mm less control rod travel than col 2

Torque control travel a =                      mm

### Checking values in brackets

\* 1 mm less control rod travel than col 2



# Test Specifications

## Fuel Injection Pumps ②

### and Governors

WPP 001/4 MB 18,3 f

2. Edition

En

PE 10 P 110 A 320 LS 3818 RQ 750 PA 636

Komb.Nr. 0 401 849 708

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 3.83

company Daimler-Benz

engine OM 423

197 kW (268 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

### A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> /100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	13,5+0,1	13,4-13,6	0,4(0,8)			
300	8,5-8,7	1,4-2,2	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

### B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
-	-	-	-	12,5 4,0 900	750-755 790-800 0-1,0	-	-	-	-	-	-

Torque-control travel  
on flyweight assembly dimension a =

mm

Speed regulation. At

750-755 min

1 mm less control  
rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/mm
1	2	3	4	5	6	7	8
700	134,0-136,0 (131,0-139,0)	-	-	-	-	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

2.84

①

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b

3. Edition

En

PE12P120A320LS3819-1 RQV 350-1150PA493

PA 493-2

1- 5- 9- 8- 3 - 4 - 11 -10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315  $\pm 0,5$  ( $\pm 0,75$ )

supersedes 3.83

company Daimler-Benz

engine OM 424 A

390 kW (530 PS)

Komb.-Nr. 0 401 840 710

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $\begin{matrix} 4,0-4,1 \\ (3,95-4,15) \end{matrix}$  mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	15,9-16,1	0,5(0,8)			
350	4,8-5,0	1,4 - 2,0	0,8(1,2)			
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.						

Adjust the fuel delivery from each outlet according to the values in 

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 14	100	min. 8,5	300	0,9-1,1
ca. 64	10,1 4,0	1190-1200 1280-1310					350	6,9-7,1	580 870 1150	3,5-3,7 5,2-5,4 7,8
	1375	0-1,0				400-600 (3a)				

Torque control travel a =  mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational speed intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel Control rod travel mm 5	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1150	0,6 bar 159,0-161,0 (156,0-164,0)	1190-1200*	LDA 650	0,6 bar 160,0-165,0 (157,0-169,0)	100	140,0-160,0 (136,0-164,0)	-	-
1150	118,0-121,0 (115,0-164,0) **		LDA 500	0 bar 127,0-129,0 (124,0-132,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

\*\* Adjusted at the inner lever of the reduced-delivery stop

2.84

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K20

K20

**Testoil-ISO 4113**

# D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)	
PE12P..LS3819-1 + ..PA 493	0,38	0,60 0 0,32	10,8-10,9 11,1-11,2 10,0-10,2 10,1-10,3	

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar (1) = maximum full-load control rod travel

# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 14,2 e

1. Edition

En

PE 8 P 120 A 920/4 LS 7002-1 RSV 350-1050 P 1/504

1-2-7-3-4-5-6-8 je 45° ±0,5° (±0,75°)

Values only apply to test nozzle-and-holder  
assembly : 688 901 019 and fuel-injection test  
tuning 1 620 750 015

These specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

Scania

company DS 14 42

engine

Komb.-Nr. 0 402 678 801

## A. Fuel Injection Pump Settings

5,0-5,1

Port closing at prestroke

(4,95-5,15

mm from BDC RW=9,0-12,0 mm

Testoil CO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
700	13,2±0,1	18,7-18,9	0,6(0,9)			
350	4,4-4,6	1,4-1,8	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 30	350	4,4	-	-
	x =	6,0					350	4,4-4,6		
							440-500	= 2,0		
ca. 64	12,2	1090-1100								
(2a)	4,0	1160-1190								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to rev/min				Idle		Control rod travel	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9	
700	187,0-189,0 (184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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1.84

K22

K22

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOG 22,6 a

2. Edition

En

PE 8 P 120 A 520/4 RS 7010 RQV 250-850 PA 686

1 - 4 - 6 - 2 - 5 - 3 - 7 - 8 je  $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$   
Values only apply to test nozzle-and-holder  
assembly 1 688 901 019 and fuel-injection test  
tubing 1 680 750 067.

superseded 6.83

company Volgograd

8 DWT 330

engine 243 kW

Komb.-Nr. 0 402 648 809

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke  $5,0-5,1$  mm (from BDC) RW =  $9,0-12,0$  mm  
(4,95-5,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> /100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,0+0,1	19,4-19,6	0,5(0,9)			
250	5,0-5,2	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	935	15,2-17,8	-	-	-	ca. 9	100	min. 6,6	250	1,1-1,3
ca. 61	12,0	890-900					250	5,0-5,2	650	4,5-4,8
	4,0	950-980					340-400	= 2,0	850	7,2
	1100	0-1,0				285-390				
						③a				

Torque control travel a = mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 850	0,7 bar 194,0-196,0 (191,0-199,0)	890-900*	LDA 500	0 bar 125,0-127,0 (122,0-130,0)	100	245,0-265,0 (241,0-269,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.84

Testoil-ISO 4113

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K23

# D. Adjustment Test for Manifold Pressure Compensator

VOG 22,6 a

- 2

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure  
increasing

Pump governor	Setting	Measurement		Control rod travel mm (1)	3. minimum difference
	Gauge pressure =	bar	Gauge pressure =	bar	
PE8P..RS7010 + RQV..PA686	0,70				13,0 - 13,1
			0		10,0 - 10,1
			0,30		12,1 - 12,3
			0,16		10,6 - 11,0
			0		

## Notes

(1) when n =

rev/min and  
gauge pressure =

bar = maximum full-load control rod travel